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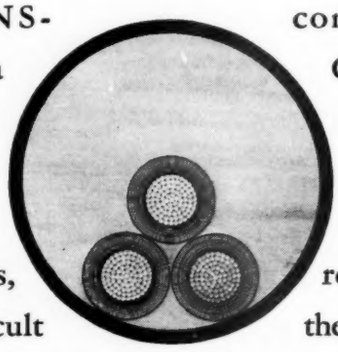

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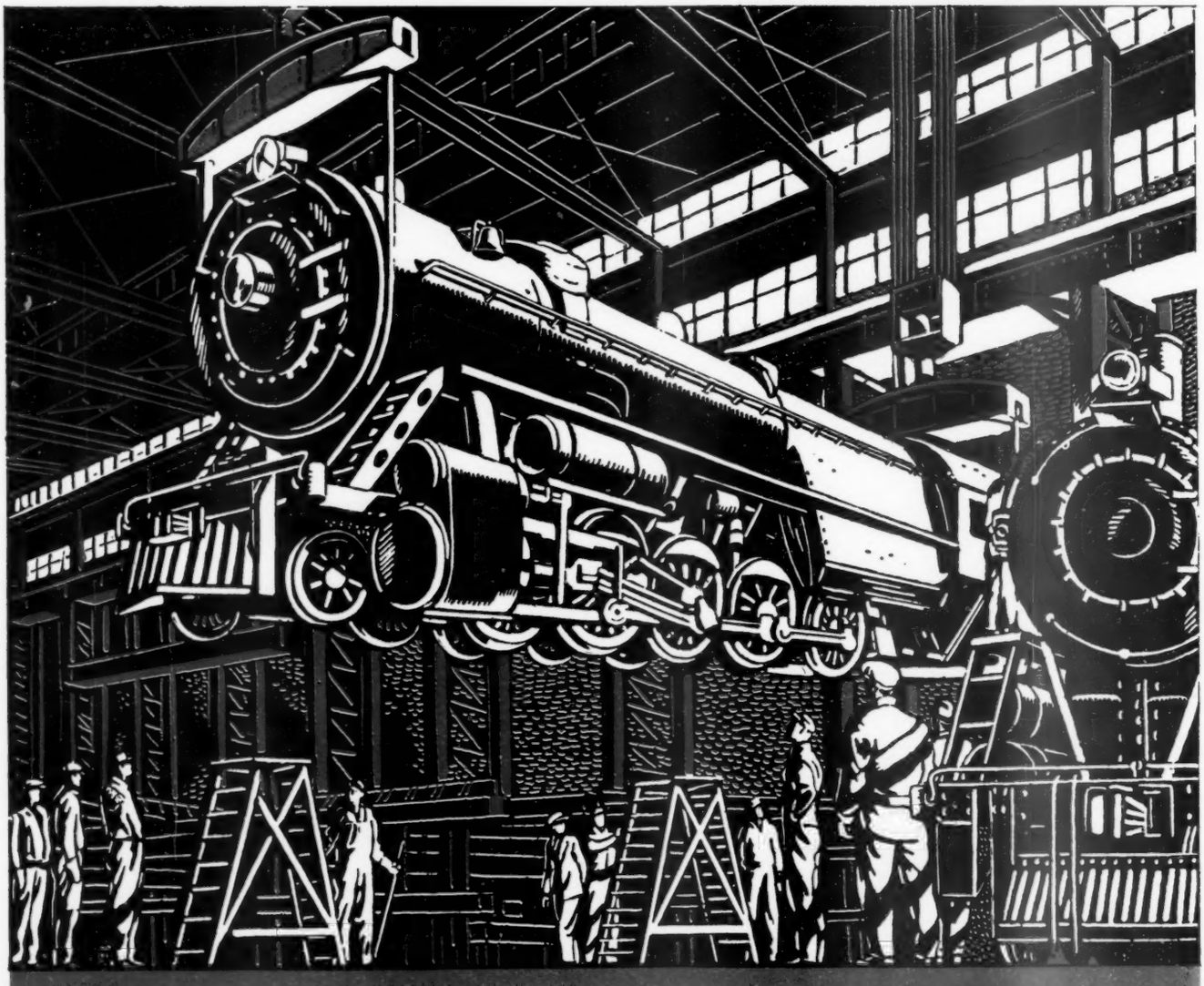

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The Railways in 1935 and 1936

Reviews and forecasts of business are customary at the beginning of a New Year. There is no real reason why this should be true. The only thing that actually happens at the beginning of a New Year is that there occurs a change in the date upon the calendar which is no more important than the similar change that occurs on every other day of the year. Experience has demonstrated that when this change in date occurs is no better time than any other to make forecasts of business. Forecasts of business made then or at any time are about equally unreliable. There are laws of cause and effect that determine the trend of general business and the trends in each particular kind of business. But while these economic laws are as absolutely natural laws as any others, their operation is less predictable because oftener apparently interfered with by human means.

When a boy catches a ball which would otherwise fall to the ground he does not thereby abolish the law of gravitation. When the people of the United States adopt numerous measures to interfere with supply or demand they do not thereby prevent operation of the economic law of supply and demand; but they do make much more difficult accurate prediction of the results of its operation.

Railway Trends Highly Favorable

All that the best forecaster can do is to consider all the business trends prevailing with which he is familiar, all the existing and prospective conditions and influences that he knows about, and then make a more or less educated guess. He will not know all the trends in different lines of business determining the trend of general business. He will not know all the existing conditions, much less all the conditions in the making, that are affecting, or will affect, these trends. He will have little idea, for example, of what Congress may do. Nobody in the heavens above, or on the earth beneath, or in the waters under the earth, can safely predict what Congress will do, especially in the midst of a depression and with a national election approaching.

However, the prevailing trends in business in general, and in the railroad industry and the industries dependent upon them for a market in particular, are at present fairly clear and definite. They have been somewhat similar during the last twelve months to what they were in 1932. In both 1932 and 1935, allowing for seasonal variations, freight traffic declined throughout the first seven months of the year, reaching bottom in July, and increased throughout the last five months of the year. Still allowing for seasonal variations, in 1932 freight loadings were almost 18 per cent larger relatively in December than in July, and in 1935 were more than 20 per cent larger relatively in December than in July; and were larger in December than in any year since 1930.

The increases in car loadings in both December, 1932, and 1935, were the cumulative effects of increases that occurred steadily throughout the five months. Still allowing for seasonal variations, there were declines in freight loadings during the same period of 15½ per cent in 1930, of 16 per cent in 1931, and of 5 per cent in 1933, and an increase of only about 1 per cent in 1934. These figures sufficiently show that the trend of freight loadings since last summer has been better than during the same part of any year since the depression began.

Net Rises With, But More Rapidly Than, Gross

When the railways are being conducted with the utmost practicable economy, as they have been within recent years, the changes in their gross earnings made by such changes in their freight loadings cause extraordinary changes in their net operating income. When there were non-seasonal declines in freight loadings in the latter parts of 1930, 1931 and 1933, there were extraordinary non-seasonal declines in their net operating income. On the other hand, when there were much larger than seasonal increases in their freight loadings in the latter parts of 1932 and 1935, there were extraordinary increases in their net operating income.

The amount of net operating income earned in the last four months of 1932 was larger than in the first eight months. Probably this was not true in 1935, but it may have been. The figures for November

and December, which are not yet available, may afford agreeable surprises. Net operating income in the last one-third of 1935 probably was 60 per cent larger than in 1934.

Improved Prospects of Employment and Buying

Most persons have an aversion to statistics. They are, however, the only form in which large and important business facts can be reduced to understandable units. The statistics of the railroad industry for periods of years demonstrate certain important facts. One of these is, that the amount of gross earnings the industry makes determines the total payroll that it can and will meet. Since the war the total payroll always has tended to become about 44 per cent of gross earnings. Changes in hourly and daily wages have, excepting for short periods, affected the number of employees on the payroll, not the total payroll. If, therefore, present wage scales are paid and gross earnings continue to increase, it is reasonably certain that there will be an increase in railway employment in 1936. There would be a larger increase of employment if the average hourly wage were reduced; a smaller increase, if it should be increased.

Another fact that statistics of the railway industry for periods of years demonstrate is that the total amount of buying done by it from the manufacturing industry is determined by the amount of railway net operating income earned. The amount of buying done from the manufacturers in any year usually is somewhat larger than the net operating income earned, and follows changes in it with remarkable closeness. Therefore, if the strong upward trend of net operating income which prevailed during the latter part of 1935 continues, the railways undoubtedly will do more buying from the manufacturers in 1936 than in any year since 1930.

Will Increases Continue?

Will the recent increases of gross earnings and net operating income continue during 1936? Owners and prospective buyers of railroad securities, railroad employees and prospective employees, and manufacturers for railways would like very much to know the answer to this question. It seems reasonable now to answer it in the affirmative with some confidence. The only reason why anybody would hesitate to answer it affirmatively with confidence is that since the depression reached bottom in the summer of 1932 there have occurred so many changes in the real or apparent trend of general business. The banking crisis affords, however, an obvious explanation of the termination in the first quarter of 1933 of the upward trend that prevailed in the latter part of 1932. The upward trend has become more pronounced within recent months than it was in the latter part of 1932; and there is now no prospect of a banking crisis or other equally potent influence to interrupt it, unless it be a war in Europe. Before the present depression an upward trend of business during the latter part of the year usually was maintained during at least the first half of the next year.

"Durable Goods" Industries Revival Key to Future

Whether the increase in railroad freight business will continue will depend principally upon what occurs in the "durable goods" industries. It is these so-called "heavy industries" the business of which declined the most, and which has been lagging the most throughout the depression. All the continuing unemployment in the country is directly and indirectly due to their lack of business. To this cause is principally due the fact that even in December, 1935, railroad freight business was still on a level about 33 per cent lower than it averaged in 1925-1929. And to continued greatly curtailed buying by the railroads themselves is largely due the inadequate business of the heavy industries. When other industries substantially increase their buying from the heavy industries, the resulting increase in railroad freight business will cause the increase in net operating income necessary to cause a large increase in railroad buying.

Steel is still the "barometer of trade," because it is so largely used in production by the heavy industries. For some months the steel business has shown more than seasonal improvement because of increased demand from a wide variety of sources. One of the industries in which a real revival is occurring is that of residential construction. Total expenditures for residential construction in 1935 were about twice as great as in 1934 and promise to be twice as great in 1936 as in 1935. By those well informed an expenditure of about $1,200,000,000 is predicted for 1936, as compared with an expenditure of about $600,000,000 in 1935 and of less than $300,000,000 in 1933.

On the whole, therefore, prospects of increased production by the durable goods industries seem good. Excepting automobiles, about five-sixths of what are called "durable goods" are bought by business itself. It buys them, as, for example, the railroads do, out of increased profits or with receipts from securities sold on the basis of actual and prospective profits. Profits in many industries that are large buyers of durable goods have improved. Business confidence in the future has increased.

Unless something occurs to dampen this increase of confidence, buying from the durable goods industries will expand, although it will require a much greater increase of confidence than has as yet occurred to cause business to undertake the issuance of the large volume of securities necessary to a full revival of the durable goods industries.

Railroad "Recovery"—and Record Bankruptcies

Experience, known existing conditions and prevailing trends combine strongly to indicate that the current increases of railway gross and net earnings will continue at least for some months and will produce correspondingly favorable effects upon railway employment and

railroad buying. The Railroad Retirement Act and the unemployment provisions of the Security Act will cost the railroads in 1936 about $60,000,000 if they are held constitutional. This increase in operating expenses will adversely affect both employment and buying, but not enough seriously to curtail them if the increase in traffic continues as rapidly as within recent months.

Gross earnings of $3,440,000,000 in 1935 were $2,920,000,000, or 46 per cent, smaller than in 1929, but 5.15 per cent larger than in 1934. Operating expenses of $2,575,000,000 were $1,986,000,000, or 43.5 per cent, smaller than in 1929, but 5.45 per cent larger than in 1934. Net operating income of about $500,000,000 was $775,000,000, or 61 per cent, smaller than in 1929, but about 8 per cent larger than in 1934.

Losses One-Eighth Recovered

Car loadings in 1932, the worst year of the depression, were 53.4 per cent as large as in 1929; in 1933, 54.8 per cent; in 1934, 58.3 per cent, and in 1935, about 59.5 per cent. To state the matter otherwise, the railways had lost in 1932 almost one-half of the freight business they had in 1929, and in 1935 had recovered about one-eighth of what they lost. Obviously, "reform and recovery" had not done much for them.

The cumulative effect of the worst net earnings in history for five years is indicated by the fact that 16 railway companies operating 29,018 miles of line were placed in receivership or trusteeship in 1935. This made the worst record of railroad bankruptcies ever recorded in any year. At the end of the year 89 companies, operating 71,658 miles of line, or 28 per cent of the total operated mileage of the country, were being managed by the courts through receivers or trustees.

Large Reduction of Railroad Mileage

One result of continued poor earnings and increasing bankruptcies was a continued reduction of railroad mileage. It reached its maximum in 1916, when it was 254,251 miles. In 1929 it had declined to 249,433 and in 1933 to 245,703. The mileage built in 1934 was 76 miles and that abandoned 1,995 miles, a net reduction of 1,919 miles. The mileage built in 1935 was 45 miles and that abandoned 1,843 miles, a net reduction of 1,798 miles. These figures indicate a total decline in 1934 and 1935 of 3,717 miles, reducing the total mileage in the country to 241,986, or to 12,265 miles less than in 1916. The reduction of mileage within 19 years has been greater than the total mileage in any state excepting Texas and Illinois. The reduction since 1929 has been almost 7,500 miles, or greater than in any one of 37 of the states. The 5,695 miles abandoned within the last three years has been in forty-five states, and has been divided among them as follows:

Railway Mileage Abandoned by States, 1933 to 1935, Inclusive

Alabama	64.30	Colorado	147.86
Arizona	159.04	Connecticut	33.93
Arkansas	131.48	Florida	99.19
California	372.22	Georgia	185.53
Idaho	51.41	New Mexico	89.12
Illinois	213.02	New York	65.54
Indiana	95.36	North Carolina	81.60
Iowa	215.27	Ohio	36.58
Kansas	528.46	Oklahoma	88.25
Kentucky	105.02	Oregon	33.06
Louisiana	82.38	Pennsylvania	175.57
Maine	93.50	South Carolina	78.04
Maryland	25.60	South Dakota	50.69
Massachusetts	33.37	Tennessee	145.19
Michigan	288.64	Texas	392.76
Minnesota	117.24	Utah	19.24
Mississippi	119.07	Vermont	33.22
Missouri	347.14	Virginia	78.23
Montana	18.37	Washington	156.22
Nebraska	50.26	West Virginia	115.70
Nevada	26.58	Wisconsin	257.24
New Hampshire	69.82	Wyoming	41.07
New Jersey	83.96		
			5,695.34

Railroad Purchases—Problems of Rebuilding and Re-Equipping

There was a decline in purchases from the manufacturing industry because of the decline in net operating income during the last eight months of 1934 and the first seven months of 1935. The number of locomotives ordered in 1935 was 83 as compared with 183 in 1934. Freight car orders were 18,699 as compared with 24,611; passenger car orders 63, as compared with 388; and rail orders about 560,000 tons as compared with 800,000 tons. Purchases of new equipment and materials from manufacturers aggregated about $400,000,000 as compared with about $500,000,000 for purchases of the same kinds in 1934, $290,000,000 in 1933 and $1,286,000,000 in 1929. These figures regarding the amount of money spent are estimates based upon incomplete information, but are probably as good estimates as the information now available permits to be made, and indicate the trend that has prevailed. The purchases made from manufacturers in both 1934 and 1935 probably were somewhat larger than the estimates here given.

In the face of downward trends of traffic and of gross and net earnings throughout the latter part of 1934 and the first seven months of 1935, and of increasing bankruptcies, the railways showed remarkable initiative in improving their passenger and freight service and adopting other measures to meet competition and rebuild their traffic. A substantial increase of traffic will confront them with problems that will be very difficult because largely new. It will necessitate greatly increased expenditures for maintenance, new equipment and other improvements. The questions of what kinds of equipment to buy and what improvements in other facilities to make will be different from those confronting them in emerging from any other depression, or, indeed, at any other time.

Need for Frequent, Fast Service

They need fast and frequent service to meet the competition of airway and highway carriers, and especially of the automobile. What changes in power should they make for this purpose? They were formerly offered steam and electric power. They are now offered also Diesel and internal combustion engines. Can they render with sufficient economy a more frequent service with shorter and lighter trains, or even with self-propelled single units? This is a question not

only of equipment design and materials, but also one as to how many employees they will have to put on each unit of service. Can they accomplish economy, safety and frequency of service with equipment made of lighter materials which may cost more than heavier materials at present, but may last longer, or the cost of which will be reduced by sufficiently large purchases of them to make practicable their mass production? Will they save more in the long run by buying as much new and modern equipment as their financial resources will permit, or by engaging in extensive programs of repairing old equipment?

Vast Obsolescence Due to Depression and Changed Conditions

They have never gone through a period of five years when they bought so little new equipment, and in which so many changes in the equipment offered to them were made, as during the last five years. The prolonged lack of buying, the changes in transportation competitive conditions and the development of new kinds of equipment and materials have made a vastly larger part of railway facilities obsolete than ever was before. The problems this situation presents are predominantly economic, not engineering. The railroads must be largely rebuilt and re-equipped, and this rebuilding and re-equipping must be done in such ways as to enable them, not only as in the past, to handle satisfactorily passenger and freight business that will come to them naturally, but also as to stop losses to other carriers and begin recovering traffic from them.

In 1923 railway managements naturally assumed that their only problem was to expand their facilities enough to handle an increased traffic. In the thirteen years since then their problem has changed completely. They were then able speedily to provide adequate service by repairing and rebuilding old facilities and acquiring improved facilities of much the same kind. Both economy and adequacy of service could be accomplished by lengthening trains, providing the improved power necessary to hauling longer trains, and improving tracks and signaling. Widely different measures are required now. Railway executives, traffic officers, operating officers, engineering officers and manufacturers for railways must reorient themselves, if, as business improves, the railways are to render the kind of service and make the rates necessary to handle the largely increased traffic that they can secure only by meeting competition.

Reducing Inequalities of Competitive Conditions

Some progress was made in 1935 toward reducing the government-made inequalities of competition between the railways and other carriers. The Motor Carrier regulation act passed by Congress will reduce the differences between the labor costs and rates of the railways and of many carriers by highway, stabilize highway transportation and enable the railways to engage more largely in highway transportation with some knowledge of the kind of business in which they are engaging. Passage of the Motor Carrier act already has been followed by a large increase in railroad ownership and operation of bus and truck lines. There is good prospect of passage at the approaching session of Congress of another measure which would be very helpful to the railways. This is the Pettengill bill for the repeal of the provision of the Interstate Commerce Act forbidding a railway to make a lower rate for a longer than for a shorter haul, excepting under conditions specified by the act which are subject to determination by the Interstate Commerce Commission.

There is apparently more public sentiment for legislation to equalize terms of transportation than ever before. To accomplish such equalization would, however, require much more legislation than has as yet been proposed by anybody excepting the railways. Tolls on waterways to relieve the taxpayers of their maintenance and interest costs would be necessary. Larger rentals for the use of the highways by commercial vehicles would also be necessary. Unfortunately, as has often been pointed out in these columns, business interests that are vociferous in opposing use of the taxpayers' money in competition with other industries are sufficiently inconsistent to continue promoting use of the taxpayers' money in competition with the railways wherever and whenever they think it will redound to their advantage.

Government Ownership and Railroad Financing

One of the most interesting, if not important, measures that were introduced at the last session of Congress, and that will be more or less considered during the approaching session, is Senator Wheeler's bill providing for government acquisition of the railways and other means of transportation. In order to create sentiment against private management, and thereby in favor of government ownership, Senator Wheeler also got passed a resolution for a Senate investigation of past railroad financing. The heads of all the railway labor unions, excepting the Brotherhood of Locomotive Engineers and the Brotherhood of Railroad Trainmen, have joined in a resolution advocating government ownership and in establishing a bureau in Washington to disseminate propaganda for it at the expense of the unions, although no poll of members of the unions to ascertain their views has been made.

No industry passed through the lamented New Era without some parts of it doing financing the detailing of which to the public under present conditions will create scandal—or apparent scandal which, for the purposes of those who desire to blackguard an industry, is almost equally useful. Therefore, it may be confidently predicted that when the Senate Committee gets its investigation of railroad financing under way it will make some more or less sensational copy for the newspapers. The labor unions will make extensive use of the "disclosures" to prejudice the employees of the railways against their bankers, security owners and managements.

Consequently, while the prospects are that the railways will do better financially in 1936 than for some years, there is no prospect that the industry will lack excitement. Their managements will have to continue to fight the depression, and, in addition, take on those who desire to drive them into government ownership by showing the public that their financial management has not been immaculate. This is unfortunate. But fortunately the public knows already that there were many industries the management of which during the New Era was not immaculate as respects either financing or many other matters, and also that the management of government has not been immaculate. Perhaps if the management of business had been better, and the management of government had not been much worse than that of business, there would not have been any depression.

Railroad Versus Government Financing

It certainly requires a lot of gall for public men who, within a few years have helped finance the federal government into the largest indebtedness in history, and while doing so have accomplished only enough "reform and recovery" to restore to the railways one-eighth of the traffic that they lost between 1929 and 1932, to engage in "disclosures" regarding railroad financing. There have been faults in railway financing, but, in spite of them, the railroads have survived a loss of almost 50 per cent of their gross earnings during the depression and borrowed from the government in efforts to save themselves from bankruptcy an amount equivalent to only 2½ per cent of their total investment. If the federal government had done its financing both before and during the depression as well, its expenditures within three years would not have been as large as the total expenditures made by it under all the presidents from Washington to Wilson, and the national debt would not now be larger than it was at the end of the greatest war in history.

The railroads need not fear Senator Wheeler's investigation much. There will be so much noise made within the next year about the recent financing of the federal government that, by comparison, the "disclosures" regarding railroad financing will attract about as much attention as would have the explosion of a firecracker during the bombardment of Verdun.

A Review of Railway Operations in 1935

Improvement in last five months offset the discouraging results of the earlier part of the year

By Dr. Julius H. Parmelee
Director, Bureau of Railway Economics

IN a period of economic crisis such as the present, every year seems a crucial one. This observation applies with peculiar force to the railways of the United States, and the year 1935 was no exception to the rule. With earnings still at low ebb, with rising costs of operation, with new laws enacted or prospective that threaten to lay additional burdens on railway treasuries, with a growing number of receiverships, the men responsible for rail operation in the United States required courage and stout hearts to carry on. Fortunately, an upturn in traffic and revenues during the last five months of the year brought relief to a situation that might otherwise have presented a drab aspect throughout.

While no appreciable change took place during the past five-year period in the financial result of railroad operations, which was bad throughout, the period was not without significant developments. Chief among these was the reversal in traffic and gross revenue trends midway in the period. In 1931, and again in 1932, these trends were definitely and sharply downward. The trend lines leveled off in the spring of 1933 and began a slow upward movement. With some fluctuations, this improvement continued throughout 1934 and in 1935, especially during the latter half of 1935.

Had the carriers been able to maintain in 1934 and 1935 the 1933 ratio of expenses to revenues, the Class I group as a whole would have been "out of the red" in both years. Increased labor costs, due to the graduated return of the ten per cent wage deduction and increased fuel, material and supply costs, more than offset the revenue gains of 1934 and 1935. Traffic and revenue increased during the last five months of 1935, yet operating expenses for the year as a whole increased at a relatively higher rate than did revenues.

As a result of operations in 1935, a number of additional railway companies were forced into the hands of receivers or trustees, bringing the number in that condition to a new high level. At the close of the year, 27.8 per cent of the rail mileage of the United States was in receivership or trusteeship. Furthermore, temporary financing measures continued to grow, as evidenced by an increase of $25,000,000 in outstanding loans and bills payable during the year.

Operating efficiency continued at a high level throughout 1935, and certain phases of operating safety, particularly in the case of passengers, were highly satisfactory.

Restoration of Wage Deduction

By agreement effective February 1, 1932, railway employees accepted for one year a ten per cent deduction from standard rates of pay, the basic rates remaining unchanged. This agreement was twice renewed and finally expired on June 30, 1934. Again by agreement, one-fourth of the deduction was restored beginning July 1, 1934; another fourth was restored January 1, 1935; the remaining one-half was restored April 1, 1935. Thus standard rates of pay were again in force for three-fourths of the year 1935.

The annual addition to the railway payroll, growing out of the total restoration of the ten per cent deduction, was approximately $160,000,000. About $20,000,000 of this increase occurred in 1934, an additional $130,000,000 in 1935, while the remaining $10,000,000 will not be felt in full—as an all-year burden—until 1936.

Increased Material and Supply Costs

Prices paid by the carriers for coal and other materials and supplies increased about 20 per cent from the spring of 1933 to the middle of 1934. The price levels in 1935 as a whole were only slightly below those of 1934 as a whole. The annual increase in operating expenses resulting from these increased prices, due to operation of NRA codes and to general economic and financial trends, is calculated at $125,000,000.

Rates and Fares

The Interstate Commerce Commission in March authorized a temporary increase in freight rates on specified groups of commodities. This increase, had it become effective on all intrastate as well as interstate traffic, would have produced an estimated increase in freight revenue of $85,000,000 per year. But the full benefit of the increase has not been experienced by the railways. The increased rates became effective on April 18, 1935, and will expire by limitation on June 30, 1936.

This temporary increase was granted as a partial offset to increased labor and material costs. It was hoped at the time that a moderate increase in traffic would make up the difference. That hope was not fulfilled until the rise in traffic levels during the last five months of the year. As the increased rates have but six months to run in 1936, the present increase in traffic must needs continue, and rise to even higher levels, if the relationship of expenses to revenues is not to rise.

The Interstate Commerce Commission closed its general investigation of passenger fares and the Pullman surcharge with the submission of final arguments in October. Belief was general at the close of the year that a report would be issued in early 1936, setting new levels for fares in coaches and Pullman cars, lower than the basic rates made effective by the Commission in 1920. These changes, if made, will be received by certain railway companies with grave forebodings of the effect on their passenger revenues. Some sections have already adopted similar changes. The passenger situation varies

considerably in different parts of the United States, and constitutes a complex rate problem.

Legislation

The increased revenues of the last five months of 1935 enabled the carriers to overcome the increase in expenses caused by higher labor and material costs, and to make a better showing in net earnings during those months. But, and this word cannot be too strongly stressed, the clearing horizon is threatened by another ominous cloud, which threatens to shower additional expenses down upon the rail industry. If this threat materializes, any revenue gains the railways may make in the near future will again be absorbed in increased costs, and the struggle for daily existence will continue on the same basis as that of the past five years. Legislation enacted during the 1935 session of Congress, the effect of which will not be felt until 1936, and the possibility of further legislation during the 1936 session, becloud the brightening sky of railway financial difficulties.

The first session of the Seventy-fourth Congress considered many bills affecting the railways. Several of these, already enacted into law, will add to railway operating costs. They include the Railroad Retirement Act of 1935, with its companion tax measure; the Social Security Act; the Bituminous Coal Conservation Act; increases in corporation income tax rates and in the rate of tax on capital stock. A group of eight bills, collectively referred to as the railway labor bills, were introduced in both Houses during the 1935 session. These bills, if enacted into law, would add three-quarters of a billion dollars annually to railway operating costs, on the basis of present traffic levels. Hearings on these bills were not completed during 1935. They remain on the calendar of the present Congress, and will undoubtedly be considered during the 1936 session.

Railroad Retirement Act, 1935

The Railroad Retirement Act, 1934, was held unconstitutional by the Supreme Court of the District of Columbia in October, 1934. This decision was upheld by a majority decision of the Supreme Court of the United States on May 6, 1935. New legislation, designed to the same general end, was driven through Congress in the closing days of the 1935 session. As in the case of its predecessor, the Railroad Retirement Act of 1935 and its companion tax measure received the benefit of only limited public hearings and consideration prior to passage.

Because the Supreme Court held the 1934 act to lie outside the power of Congress to regulate interstate commerce, the framers of the 1935 legislation resorted to the taxing power of Congress for accomplishment of the same purpose. They therefore submitted two bills, one setting up a railroad retirement system, the other levying special taxes on railway payrolls. Technically, the bills had no relationship to each other; actually, they formed parts of the same pension system or plan.

The new Railroad Act provides for payment of annuities to retired railway employes, out of United States Treasury funds. Its companion tax act levies an income tax of 3½ per cent on railway employees, and an excise tax of 3½ per cent on railway employers, both taxes being levied on the payrolls and payable to the United States Treasury. Compensation in excess of $300 per month is exempt from these taxes. The two acts become fully operative on March 1, 1936, while annuities are to begin ninety days later. The Railroad Retirement Board, of three members, was appointed and took office before the close of 1935.

Meanwhile a special commission, created by the Retirement Act, is charged with investigating and reporting upon all phases of a pension system, with a view of facilitating the effective carrying-out of the Act. This commission, the complete membership of which was not designated until December 6, 1935, is scheduled to submit its report not later than January 1, 1936.

On the basis of current payrolls, the tax measure will add approximately $54,000,000 annually to the operating expenses of Class I carriers. Toward the close of the year, the railways announced their intention to challenge the constitutionality of the legislation.

Social Security Act

The Social Security Act of 1935 levies a tax on employers and employees for old age benefits. The tax act of the Railroad Retirement system of 1935 exempts carriers and their employees from this tax. The Social Security Act also levies a tax, on employers only, for the purpose of unemployment insurance. To this tax railway companies as employers of labor are liable. The cost of this tax to the railways will approximate $16,000,000 for 1936, $32,000,000 for 1937, and $48,000,000 per year thereafter. The levy becomes operative on January 1 1936, applies to the total payroll, and is at the rate of one per cent during 1936, two per cent during 1937, and three per cent during 1938 and succeeding years.

Bituminous Coal Conservation Act

It is estimated that the Guffy-Snyder Coal Conservation Act of 1935 will add to the annual fuel bill of the railways. This addition, together with increased fuel costs growing out of wage adjustments in bituminous coal fields, will increase railway operating costs by an amount estimated in the neighborhood of $20,000,000 per year.

Tax Rate Increases

The Revenue Act of 1935, graduating the corporation income tax rate, will increase the railway federal income tax. In addition, the increase of 40 per cent in the rate of tax on capital stock, enacted by Congress during the last session, will add to the railway tax bill.

Finance Investigation

Senate Resolution 71, introduced by Chairman Burton K. Wheeler of the Senate Committee on Interstate Commerce, and adopted by the Senate in May, directed that committee to make a thorough investigation of railway financing, reorganizations, financial policies, and the like, and submit its report to the Senate.

The committee set up a subcommittee of seven, with Senator Wheeler as chairman, to conduct the investigation, and research was carried on through the remainder of the year. No hearings were called, and no report was completed by the close of 1935.

Repeal of Fourth Section

The long-and-short-haul clause will be eliminated from the fourth section of the Interstate Commerce Act if Congress enacts the Pettengill bill (H.R.3263), which was unanimously reported out during the past session by the Committee on Interstate and Foreign Commerce of the House of Representatives. Extended hearings on the bill were held by the committee before its favorable report was submitted.

The long-and-short-haul clause provides that railway rates to any point may not be lower than those to a less distant point on the same route, except in a limited class of cases, and then only when specific authority is obtained from the Interstate Commerce Commission. The

practical effect of the clause has been to prevent railways from handling a large volume of competitive traffic, diverted to other means of transportation.

Labor Bills

Eight labor bills, so-called because they were introduced on behalf of and were actively supported by railway labor organizations, would, if enacted into law, increase railroad operating expenses by approximately $750,000,000 annually on the basis of the 1935 volume of traffic, and by over a billion dollars annually on the basis of the 1930 volume of business. The eight bills, which are still before Congress, and which may be considered during the 1936 session, are as follows:

1. Railroad Track and Bridge Inspection—designed to provide uniform inspection of railroad tracks, bridges and appurtenances; would grant Interstate Commerce Commission authority to order maintenance and repair work, if in its opinion necessary.

2. Train Length Limitation—designed to limit the length of freight trains to one-half mile and passenger trains to 14 cars.

3. Full Crew—designed to fix the minimum number of men legally required to operate trains of various lengths.

4. Hours of Service—designed to limit the hours of service that railroad employees may be required to remain on duty in any 24-hour period.

5. Train Dispatching Office Inspection—designed to provide for inspection and investigation of conditions in train-dispatching offices.

6. Signal Inspection—designed to provide for inspection of railroad signal apparatus; would grant Interstate Commerce Commission authority to require installation of signal devices, if in its opinion necessary.

7. Six-Hour Day.

8. Dismissal Compensation.

Hearings on the first six bills in this list were held during June and July, 1935, before a subcommittee of the Senate Committee on Interstate Commerce. No reports have yet been made. The bills were also introduced in the House, were referred to the Committee on Interstate and Foreign Commerce, and were referred by that Committee to a subcommittee for consideration.

Government Ownership

Chairman Wheeler in April introduced a Senate bill, sponsored also by Representative Maury Maverick of Texas in the House, which provides for the acquisition, ownership, and management of the railways by a federal corporation, to be known as the "United States Railways."

Rail properties are to be acquired, under the provisions of the bill, either by exchange of securities or by condemnation proceedings. In either case, the clear intent of the bill is to limit the price paid for the railways to a total considerably below their book value, and also below the par value of their outstanding securities. While the relative price would vary greatly from company to company, this would be the result for the carriers as a whole.

Furthermore, the contingent securities offered as a part of the price, when the acquisition is by exchange of securities, would pay interest or dividends only if and when earned.

The bill vests the management of the United States Railways in a board of five trustees, who shall operate the lines on a "self-supporting basis," and it is further solemnly provided that they and their staffs are to be kept absolutely free from political control and influence.

Some of the railway labor unions endorsed the principle of government ownership in 1935, and instituted a campaign to establish it as a national policy.

Motor Carrier Act, 1935

One act of both direct and indirect interest to the rail industry was the long-awaited act to regulate commercial motor carriers on the highway. This was approved by the President on August 9, 1935.

The Motor Carrier Act, 1935, which Congress identified as Part II of the Interstate Commerce Act, sets up a detailed plan for regulation of motor carriers engaged in interstate commerce on the highways, under the jurisdiction of the Interstate Commerce Commission.

Common carriers by truck and bus shall be certificated by the commission and are subject to rate regulation. Contract carriers shall be issued permits, and are subject to regulation of their minimum charges. Both common and contract carriers are subject to requirements of the commission relating to accounts, records, and reports, safety of operation, and adequate liability coverage.

Private carriers of property shall register with the commission. A private carrier is any operator engaged in the interstate transportation of goods in commerce, not classified as either a common or a contract carrier.

All motor carriers, including common and contract carriers and private carriers of property, are subject to requirements relating to qualifications and maximum hours of service of employees, and standards of equipment.

Provision is also made for the licensing and control of brokers of motor transportation service.

A separate Bureau of Motor Carriers was created by the commission to administer the provisions of the act. As soon as that bureau has been effectively organized, much benefit will accrue to the orderly regulation of transportation as a whole throughout the United States.

A bill to place water carriers under the regulatory jurisdiction of the Interstate Commerce Commission is still before Congress, and will undoubtedly receive consideration during the coming session.

Federal Aid for Highways and Waterways

Under the terms of the National Industrial Recovery Act of 1933 and the Hayden-Cartwright Act of 1934, a total of $675,000,000 was appropriated or allocated for Federal aid to highway construction and improvement during the fiscal years 1934 and 1935.

Subsequently, the Emergency Relief Appropriation Act of April 8, 1935, authorized the allocation of not to exceed $800,000,000 for highways, roads, streets, and grade crossing elimination. Under this authorization, $200,000,000 was allocated for highways, and $200,000,000 for grade crossing work, while $100,000,000 was taken over as the unused balance of $200,000,000 originally authorized by the Hayden-Cartwright Act.

Under the Hayden-Cartwright Act, additional federal aid appropriations were authorized to be made in the amount of $125,000,000 for each of the fiscal years 1936 and 1937.

The grand total of all federal appropriations made or authorized for highway purposes from July 1, 1916, to April 8, 1935, aggregated $3,493,000,000. Of this amount, $1,625,000,000, or nearly one-half of the total, has been appropriated or authorized since June, 1933.

Appropriations during the fiscal year 1935 for waterway improvements aggregated some $271,000,000, of which the regular War Department appropriation of $44,000,000 was for maintenance, operation, and care of waterways, locks, dams, etc.; $97,000,000 was allotted

through the Public Works Administration for navigation work; the remaining $130,000,000 was allocated through the Federal Emergency Relief Administration for waterway improvement. Except for an unknown part of the last named allocation, none of these appropriations and allotments were for flood control purposes, but were designed for the improvement and maintenance of water navigation.

Federal Co-ordinator of Transportation

The office of Federal Co-ordinator of Transportation, created by the Emergency Railroad Transportation Act, 1933, for a period of one year from June 16, 1933, was extended one year by order of the President, as empowered by the act, to June 16, 1935. By Act of Congress approved June 14, 1935, the office was extended another year, or to June 16, 1936. The expense of the office is borne by the railways, which now contribute annually at the rate of two dollars per mile of line, or more than $500,000 per year.

During his tenure of office, Co-ordinator Joseph B. Eastman has made three major reports recommending legislation for the improvement of transportation conditions generally. These reports were transmitted through the Interstate Commerce Commission to the President and to Congress. The Motor Carrier Act, 1935, is one tangible result of the Co-ordinator's recommendations.

The Co-ordinator during 1935 continued his researches into many phases of railroad operation and management, bringing to a conclusion many of the studies begun during the early days of his office. The results of these studies have been referred to the several Regional Co-ordinating Committees of railway officers, for such action as may seem practicable under present conditions.

The Regional Co-ordinating Committees have remanded to the Association of American Railroads, for analysis and study, certain of the Co-ordinator's studies and suggestions. This policy has received the approval of Co-ordinator Eastman.

The Association of American Railroads was organized in the autumn of 1934, and acts in matters of collective interest to the railroads. The Association is well-equipped to study and analyze the effect on the railroad industry as a whole of recommended changes in operating methods, practices and policies, numbering among its personnel practical operating men as well as technical and mechanical experts.

Among the more important recommendations of the Co-ordinator now under study by the Association are those in connection with car pooling, merchandise traffic, terminal unification, passenger traffic, and car-load freight traffic. On May 1, 1935, the so-called "average per diem" plan for settlement for the use of box cars as between railroads was put into operation by the Association. This plan was in effect for several years on the railways in New England, and was extended by the Association to all the railways as indicated. A survey of its results indicates that it has already effected a considerable reduction in empty freight car mileage and consequent handling expense.

Railway Financing

During the period of income shortages, the railways of necessity have resorted to measures of temporary financing. Loans through the Reconstruction Finance Corporation, the Public Works Administration, the banks, and their own Railroad Credit Corporation have enabled many companies, temporarily at least, to bridge over periods of acute financial distress. Such methods of financing cannot be continued indefinitely. The need of railways today is not new sources from which to borrow money, but rather increased earnings with which to curtail their short-term loans, and to supply a credit basis for normal financing. For the first time in the past five years increased earnings in the near future are in prospect, provided increased expenses occasioned by legislative enactments do not absorb the prospective increase in operating revenues.

Reconstruction Finance Corporation

The Reconstruction Finance Corporation was organized by the government early in 1932 as a lending agency to industry during the period of restricted credit conditions. The Corporation has authorized loans to railway companies (to November 30, 1935), excluding authorizations subsequently cancelled or with drawn, amounting to $487,407,572. Of this amount, $487,122,572 had been actually disbursed up to November 30, 1935. Repayments to that date totaled $74,327,446, leaving outstanding loans amounting to $412,795,126.

Public Works Administration

The Public Works Administration allotted a total of $200,228,500 in loans to railroads down to November 30, 1935, of which $184,013,500 had actually been disbursed. More than one-half of the securities acquired by the government from these loans were sold at a profit during the year.

Railroad Credit Corporation

The Railroad Credit Corporation was organized by the railways in 1932, to pool receipts from the temporary freight rate increases granted at the end of 1931, and to operate the pool as a loan fund. Lending powers of the Corporation expired by limitation in May, 1933; up to that date, loans to participating companies aggregated $73,691,000. Since then, the Corporation has been liquidating its assets, and from time to time returning to the railways payments on their original contribution, in the form of cash or of credit on loans. By December 31, 1935, outstanding loans had been reduced to $46,578,000, and 40 per cent of total contributions to the pool had been returned to participating companies.

Improvements in Service

The stimulating effect of efforts of railways to build up the passenger traffic that has been drifting away to other forms of transportation, such as the private automobile, the motor bus, and the airplane, continued to show gratifying results in 1935, as they did in 1934. This was assisted in the West by a general advertising campaign, in which the railways of that district participated.

The problem is being attacked on the four fronts of safety, speed, comfort, and cost. All these elements have their appeal, and the railways can supply them as fully as, if not better than, any other form of land transportation.

Since the success of the first air-conditioned cars installed in 1931, some 5,800 railway and Pullman passenger cars have been so equipped to the end of 1935.

The wide publicity given to each new speed train, to streamlining, to Diesel power, and to electric and other power systems, has captured public imagination, and has contributed materially to bringing back to the railways the passenger traffic and revenues that have dwindled so heavily during the past fifteen years.

In the freight field, service has also been improved, through the scheduling of trains, speeding up of movement, and extension of collection and delivery service,

sometimes known as store-door delivery, or pick-up and delivery.

The Association of American Railroads, at its annual meeting in November, adopted a resolution recommending to the several groups the installation of local and joint collection and delivery service on merchandise freight, to the extent and in the manner found practicable by each group, as early as possible, and under such rate structures as deemed advisable.

The general results of these improvements in freight and passenger service appear statistically at a later point.

Receiverships and Trusteeships

Amendment of the Federal Bankruptcy Act in 1933, together with continued financial pressure on railway companies, led to additional receiverships and trusteeships in 1935, leaving the situation at the end of the year worse than at any previous date in railway history.

Eighty-nine railway companies of all classes were in the hands of receivers or trustees on December 31, 1935. Of these, 33 were railway companies of Class I, with an operated mileage of 68,399, more than a quarter of the total Class I mileage. Nine of the 33 companies went into the hands of the courts in 1935, one in 1934, twelve in 1933, three in 1932, and eight prior to 1932.

Principal Operating Factors

The following summary of the statistical results of railway operation in 1935 will be succeeded by a somewhat more detailed analysis. All the statistics relate to railways of Class I, and all are subject to revision when final reports for the year become available.

1. Freight traffic (ton-miles) in 1935 increased 4.6 per cent over 1934, and 12.8 per cent over 1933.

2. Passenger traffic (passenger-miles) increased 2.0 per cent over 1934, and 12.6 per cent over 1933.

3. Operating revenues increased 5.1 per cent over 1934, while operating expenses increased 5.4 per cent.

4. Net railway operating income approximated $500,000,000 in 1935, an increase of $37,000,000 over 1934.

5. The net deficit after fixed charges is estimated at $15,000,000 in 1935, compared with a net deficit in 1934 of nearly $17,000,000.

6. Added efficiency in operation is disclosed by the statistics of performance.

Traffic

Revenue freight carloadings in 1935 showed a generally downward tendency to the middle of August. The tide then turned, and to the end of the year carloadings picked up the arrearages to date and added 628,000 cars. The result was that whereas the first 32 weeks of 1935 to August 10 showed a decrease under 1934 of 418,000 cars, the remaining 20 weeks showed an increase of 1,046,000 cars, with a net increase for the year as a whole of 628,000 cars, or 2.1 per cent.

The peak loading of the year occurred during the week of October 12, with 734,274 cars, compared with a 1934 peak of 647,531 cars, in the week of September 1, 1934.

This recovery in the closing months of the year encourages the hope that 1936 will continue to show improvement over 1935.

Forest products, ore and miscellaneous classes all contributed to the gain, but miscellaneous loadings had by far the greatest share in the improvement.

Table I summarizes railway freight and passenger traffic in the years 1931 to 1935, compared with the five-year average, 1926 to 1930, in each case.

Carloadings in 1935 were greater than in any of the three preceding years, but were 15.2 per cent lower than in 1931, and 38.2 per cent below the five-year average to 1930. Revenue ton-miles increased 4.6 per cent over 1934, compared with an increase of 2.1 per cent in carloadings. Passenger-miles in 1935 were 2.0 per cent greater than in 1934, 12.6 per cent greater than in 1933, and 8.4 per cent greater than in 1932, but were less than in any other prior year since 1901.

Table I—Comparative Traffic Statistics

Revenue Carloadings (Thousands)	
1935	31,500
1934	30,847
1933	29,220
1932	28,180
1931	37,151
Five-year average 1926-1930	50,974
Revenue Ton-Miles (Millions)	
1935	281,000
1934	268,711
1933	249,223
1932	233,977
1931	309,225
Five-year average 1926-1930	427,234
Revenue Passenger-Miles (Millions)	
1935	18,400
1934	18,033
1933	16,341
1932	16,971
1931	21,894
Five-year average 1926-1930	31,723

The increase in passenger traffic in 1935 was accompanied by an increase of 2.6 per cent in passenger revenue. As already indicated, this was the second succes-

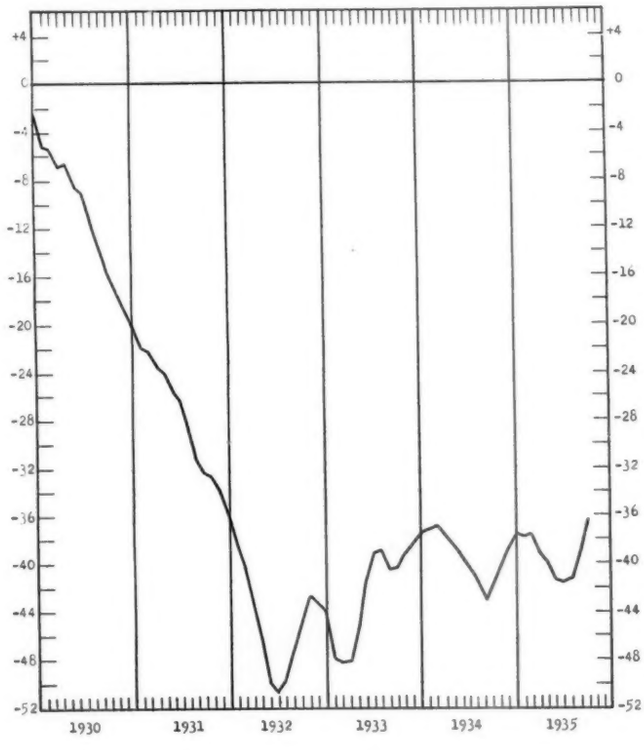

Chart A—Moving Average of Carloadings, 1930-1935

Per Cent of Increase or Decrease Over Corresponding Period of Five-Year Average, 1926 to 1930, Based on Middle Month of Successive Three-Month Periods.

sive year since 1923 in which passenger traffic and revenue trends gave cause for encouragement.

Chart A, which shows a moving average of carloadings

from the beginning of 1930 to the end of 1935, indicates that the trend since the middle of 1932 has been gradually, although very irregularly, upward. Each year has literally had its ups and downs. A sharp dip occurred in 1932, and two well-defined ones in 1933.

The rise out of the trough of 1935 is clearly marked, and this has carried the curve to a higher point than has been attained at any time since the beginning of 1932.

Loadings by Commodity Groups

Table II distributes the 31,500,000 cars loaded in 1935 among the eight principal commodity groups. The percentage increase or decrease of each group, from 1934 to 1935, appears in the second column of the table.

Table II—Distribution of Carloadings

	Number (000)	Per cent increase 1935 over 1934	Per Cent Distribution 1935	1934
Grain and products	1,573	* 4.6	5.0	5.3
Live stock	712	*33.9	2.3	3.5
Coal	6,156	0.2	19.5	19.9
Coke	338	2.7	1.1	1.1
Forest products	1,376	19.6	4.4	3.7
Ore	993	25.0	3.1	2.6
Merchandise, L.C.L.	8,134	* 1.5	25.8	26.7
Miscellaneous	12,218	6.4	38.8	37.2
Total	31,500	2.1	100.0	100.0

* Decrease.

Five of the eight commodity groups increased in 1935, the percentage of increase ranging from 25.0 per cent for ore down to 0.2 per cent for coal. On the other hand, grain, live stock, and merchandise l.c.l. declined. While ore and forest products showed the greatest relative increases, the greatest actual gain in number of cars was recorded in miscellaneous freight.

Financial Results in 1935

Revenues, expenses, and net earnings all showed increases in 1935, although the carriers still remained "in the red" after fixed charges. Table III summarizes the income account of railways of Class I for the years 1935, 1934 and 1930. The year 1930 is included in the comparison, so as to show a five-year spread, and to supply a background more nearly normal than that offered by any intervening year since 1930.

Table III—Income Account

	1935 (millions)	1934 (millions)	1930 (millions)
Total operating revenues	$3,440	$3,272	$5,281
Total operating expenses	2,575	2,442	3,931
Taxes	238	240	349
Net railway operating income	500	463	869
Net *deficit* after fixed charges	15	17	524*

* Net income.

Total operating revenues in 1935 increased $168,000,000, or 5.1 per cent, over 1934, but were 34.9 per cent less than in 1930. Operating expenses in 1935 increased $133,000,000, or 5.4 per cent, over 1934, and were 34.5 per cent less than those of 1930.

The operating ratio, which stood at 74.4 per cent in 1930, increased slightly to 74.6 per cent in 1934, and showed another slight increase to 74.9 per cent in 1935. This measure of operating efficiency shows the effective control the railways in 1934 and 1935 exercised over their expenses. With revenues in each of those years about two billions less than in 1930, their operating ratio was maintained at no appreciably higher level than in 1930. As the Interstate Commerce Commission expressed it in its annual report for 1932, "the railroads have been in general suprisingly successful in reducing their operating expenses in a ratio reasonably close to the reduction in operating revenues."

Net railway operating income amounted to $500,000,000 in 1935, which was an increase of $37,000,000, or 8.0 per cent, over 1934, but was less by 42.5 per cent than in 1930.

For four successive years, the railways as a whole have suffered a net deficit after fixed charges. The net deficit in 1935 compares with the net deficit of the three prior years as shown below; the entry for 1935 is estimated, and is based on monthly returns, which are subject to later adjustment when the annual reports are filed. The totals for the earlier years are from the annual reports.

Year	*Net deficit* after fixed charges
1935	$15,000,000
1934	16,887,000
1933	5,863,000
1932	139,204,000

Operating Revenues

All classes of revenue, except express, showed increases in 1935. Table IV compares the principal items of railway revenue in 1935, 1934, and 1930.

Table IV—Operating Revenues

	1935 (millions)	1934 (millions)	1930 (millions)
Freight revenue	$2,780	$2,634	$4,083
Passenger revenue	355	346	730
Mail revenue	92	91	111
Express revenue	53	54	115
All other	160	147	242
Total	$3,440	$3,272	$5,281

Freight revenue increased $146,000,000 from 1934 to 1935, or 5.5 per cent, but was 31.9 per cent less than in 1930. Passenger revenue increased by $9,000,000, or 2.6 per cent, over 1934, but remained 51.4 per cent below 1930.

Operating Expenses

Every class of operating expenses, except the group of general accounts, increased in 1935. Table V compares the principal items of railway operating expenses in 1935, 1934, and 1930.

Table V—Operating Expenses

	1935 (millions)	1934 (millions)	1930 (millions)
Maintenance of way	$399	$365	$706
Maintenance of equipment	672	638	1,019
Traffic	93	89	128
Transportation	1,241	1,164	1,848
General and other	170	186	230
Total	$2,575	$2,442	$3,931

Transportation expenses increased $77,000,000, or 6.6 per cent, 1935 over 1934. Maintenance of equipment increased $34,000,000, or 5.3 per cent, while maintenance of way also increased $34,000,000, a relative increase of 9.3 per cent.

Net Railway Operating Income and Rate of Return

The rate of return showed a slight improvement in 1935, although still below two per cent. Table VI is a ten-year comparative statement of net railway operating

Table VI—Net Railway Operating Income and Rate of Return

	Net Ry. Op. Inc. (000)	Per cent		Net Ry. Op. Inc. (000)	Per cent
1935	$500,000	1.90	1930	$ 868,879	3.30
1934	462,652	1.79	1929	1,251,698	4.84
1933	474,296	1.83	1928	1,172,864	4.65
1932	326,298	1.25	1927	1,067,985	4.30
1931	525,628	2.00	1926	1,213,090	4.99

income and the rate of return on property investment, 1926 to 1935.

The rate of return on property investment in 1935 was 1.9 per cent, compared with 1.8 per cent in 1934, and 3.3 per cent in 1930. Rates of return for the three districts in 1935 were as follows: Eastern District, 2.5 per cent; Southern Region, 1.7 per cent; Western District, 1.2 per cent.

Revenue per Traffic Unit

While slight increases occurred in 1935, in average revenue per ton-mile and average revenue per passenger-mile, the general tendency of both those averages since 1921 has been downward. Revenue per ton-mile declined, during the fourteen-year period from 1921 to 1935, by 23.1 per cent, while revenue per passenger-mile declined 37.5 per cent during the same period. Averages for each of the fourteen years appear in Table VII.

Table VII—Average Revenue per Ton-Mile and Passenger-Mile 1921-1935

Year	Revenue per ton-mile (cents)	Revenue per passenger-mile (cents)
1935	0.980	1.930
1934	0.978	1.918
1933	0.999	2.013
1932	1.046	2.219
1931	1.051	2.513
1930	1.063	2.717
1929	1.076	2.808
1928	1.081	2.850
1927	1.080	2.896
1926	1.081	2.936
1925	1.097	2.938
1924	1.116	2.978
1923	1.116	3.018
1922	1.177	3.027
1921	1.275	3.086

Capital Expenditures and Purchases

Preliminary estimates indicate that gross capital expenditures, and the amount expended for fuel, material and supplies, were greater in 1935 than in any year since 1931. Table VIII is a summary of the amounts spent by railways of Class I for capital improvements, and for the purchase of material and supplies, for each of the ten years from 1926 to 1935.

Table VIII—Capital Expenditures and Purchases

Year	Capital expenditures	Purchases of materials and supplies
1935	*$225,000,000	* $625,000,000
1934	212,712,000	600,224,000
1933	193,947,000	465,850,000
1932	167,194,000	445,000,000
1931	361,912,000	695,000,000
1930	872,608,000	1,038,500,000
1929	853,721,000	1,329,535,000
1928	676,665,000	1,271,341,000
1927	771,552,000	1,395,928,000
1926	885,086,000	1,559,032,000
Total—ten years	$5,130,397,000	$9,425,410,000

* Preliminary estimate.

Gross capital expenditures for 1935 are estimated at $225,000,000, and purchases of material and supplies at $625,000,000. These amounts represent increases of from four to six per cent over 1934.

Railway Equipment

Locomotive and passenger car installations during 1935 were greater in number than during 1934, while freight car installations declined materially. The numbers of steam locomotives and freight cars on order at the close of the year showed increases over the corresponding date in 1934.

The Car Service Division, Association of American Railroads, reports that 31 steam and 102 electric locomotives, and 8,254 freight cars, were installed in 1935. On December 1, 1935, 14 steam and 3 electric locomotives, and 4,489 freight cars, were on order. Table IX shows installation and on-order statistics for locomotives and freight cars, and for passenger cars (nine months).

Table IX—New Equipment Installation

(Railroad Owned or Controlled Units)

	Installed during year	On order December 31
Steam locomotives:		
1935	31	*14
1934	59	7
1933	1	1
1932	37	3
1931	124	39
1930	782	120
Electric locomotives:		
1935	102	*3
1934	31	90
Freight cars:		
1935	8,254	*4,489
1934	24,103	628
1933	1,879	224
1932	2,968	2,431
1931	12,662	4,042
1930	76,909	9,821
Passenger cars:		
1935 (9 months)	415	*9
1934	218	311
1933	147	6
1932	205	15
1931	528	15
1930	1,702	264

* Locomotives and freight cars on order Dec. 1 and passengers cars on Oct. 1, 1935.

Steady decline occurred in the margin of locomotive and car supply over the demand, from 1933 to 1934, and again from 1934 to 1935. Even so, the surplusage in 1935 was above normal at all times, and it would take a considerable increase in traffic to reduce the margin to a dangerous minimum, or to wipe it out altogether.

The number of stored serviceable locomotives averaged 3,987 in 1935, compared with 5,056 in 1934 and 7,408 in 1933.

The daily railway freight car surplus averaged 285,337 serviceable cars in 1935, compared with 363,813 in 1934 and 515,451 in 1933. These figures do not include privately owned or special service cars. The freight car surplus in 1935 ranged from a minimum of 208,158 to a maximum of 376,575 cars.

Locomotives in good, serviceable order averaged 77.4 per cent in 1934 and 1935, 78.9 per cent in 1933, and 73.9 per cent in 1932. Serviceable freight cars averaged 84.8 per cent in 1935, 84.9 per cent in 1934, 85.8 per cent in 1933, and 89.8 per cent in 1932.

Freight Train and Car Movement

Average speed of freight trains between terminals has continued to increase. This average, including all road delays, reached a new high record of 16.0 miles per hour in 1935. The increase from 1922 to 1935 was 44.1 per cent, while Table X shows that the increase over the ten-year period from 1925 to 1935 was 35.6 per cent.

Table X—Average Speed of Freight Trains

	(miles per hour)
1935 (10 months)	16.0
1934	15.9
1933	15.7
1932	15.5
1931	14.8
1930	13.8
1929	13.2
1928	12.9
1927	12.3
1926	11.9
1925	11.8

The average speed of 16.0 miles per hour, if main-

tained for a continuous period of 24 hours, means a total distance of 384 miles covered in a day.

If average movement of freight cars and locomotives be reduced to an "active" basis, excluding stored or surplus equipment from the computations, a picture of equipment performance is presented. On this basis, there was appreciable improvement during 1935.

Average movement per "active" freight car per day during the first ten months of 1935 was 30.3 miles, compared with 29.9 miles for the first ten months of 1934.

Average movement per "active" freight locomotive was 58.7 miles per day during the first ten months of 1935, compared with 57.5 miles for the first ten months of 1934. The corresponding average for "active" passenger locomotives was 117.7 miles per day during the first ten months of 1935, and 111.3 miles for the first ten months of 1934.

Other Performance Averages

Generally speaking, the significant factors of operating efficiency improved during the year 1935.

Both the average freight train load and the average car load increased in 1935. The average train load was definitely up, 731 tons during the first ten months of 1935, compared with 709 tons during the first ten months of 1934. Ton-miles per loaded freight car-mile for the first ten months of 1935 averaged 25.9 tons, fractionally higher than in 1934.

Net ton-miles per freight car per day in 1935 showed an appreciable increase. The daily average was 413 ton-miles during the first ten months of 1935 and 380 ton-miles during the same period of 1934. Gross and net ton-miles per train-hour again broke all records in 1935. They were as follows, during the past three years.

	Gross	Net
1935 (10 months)	28,804	11,726
1934	28,041	11,225
1933	27,344	10,974

Fuel consumption per 1,000 gross ton-miles in the freight service during the first ten months of 1935 was 119 pounds compared with 120 pounds in the first ten months of 1934, 121 pounds in 1933, and 163 pounds in 1922. Fuel consumption per passenger train car mile averaged 15.3 pounds during the first ten months of 1935 compared with 15.0 pounds during the corresponding period of 1934, and 17.9 pounds in the year 1922.

Total number of casualties to nontrespassers resulting from railway operation decreased during the first nine months of 1935, compared with the corresponding period of 1934. There was an increase of 53 fatalities, a decrease of 764 non-fatal injuries, and a decrease of 711 in total casualties.

Excluding both casualties to trespassers and at grade crossings, both fatalities and non-fatal injuries during the first nine months of 1935 decreased under 1934. Total casualties showed a decrease of 909, or 5.6 per cent. Preliminary information for the first eleven months of 1935 indicates that not a single passenger fatality occurred in a train accident during that period.

Railway Employees

The railway personnel during 1935 averaged 995,000, compared with 1,007,702 in 1934, a decrease of 1.3 per cent. Aggregate compensation to employees, however, increased from $1,519,000,000 in 1934 to $1,630,000,000 in 1935 or 7.3 per cent. This increase was largely due to the restoration of standard rates of pay.

Average employee earnings in 1935 showed an increase, being affected by changes in force and working hours, and by the restoration on January 1 of 2½ per cent, and on April 1 of the remaining 5 per cent, of the 1932 wage deduction. Annual earnings per employee averaged $1,639, in 1935, compared with $1,508 in 1934. Hourly compensation per employee averaged 68.4 cents in 1935, against 63.5 cents in 1934. These were increases of 8.7 per cent and 7.6 per cent, respectively.

Summary

The railways entered the year 1935 with discouraging financial results, due in part to declining traffic and in part to rising costs of operation from the restoration of wages and from increased fuel and material prices. The first seven months of the year offered little ground for optimism. Revenues were about the same in 1934, but expenses had gone up, net operating income had declined, and the carriers were nearly $80,000,000 in the red. However, a moderate upward trend in traffic from the middle of August to the end of the year stimulated the net earnings of the carriers. Net operating income turned definitely upward, with the result that the net deficit after fixed charges was considerably reduced by the end of the year.

A striking illustration of the effect of increased traffic on net earnings is afforded by comparing the results of operation in July and October, 1935. With an increase of $66,000,000 in operating revenues from July to October, net railway operating income showed an increase of $48,000,000. In other words, nearly three-fourths of the increased revenues of October reached the net operating income. Such a result cannot be expected throughout future months, because maintenance and other expenses must necessarily increase, yet the comparison has considerable significance.

Many economists forecast some improvement in the general levels of business activity in 1936, a figure often used being 10 per cent. Such an increase, if realized, will be reflected in railway traffic and revenues. On the other hand, the railways are faced with additional costs resulting from acts already passed by Congress, such as retirement annuities, unemployment insurance, increased cost of coal, and additional income and capital stock taxes. The temporary freight rate increases authorized by the Commission in April, 1935, expire by limitation on June 30, 1936, while some of the carriers may be called upon to reduce their basic passenger rates.

The year 1936, as has been true of every year of the depression, offers much opportunity for speculative forecast. The situation is a mixed one, with both good and bad elements. How these varying elements will combine, which group will gain ascendency, and what will be the final pattern woven by the events of the coming year, only the succession of those events will fully reveal.

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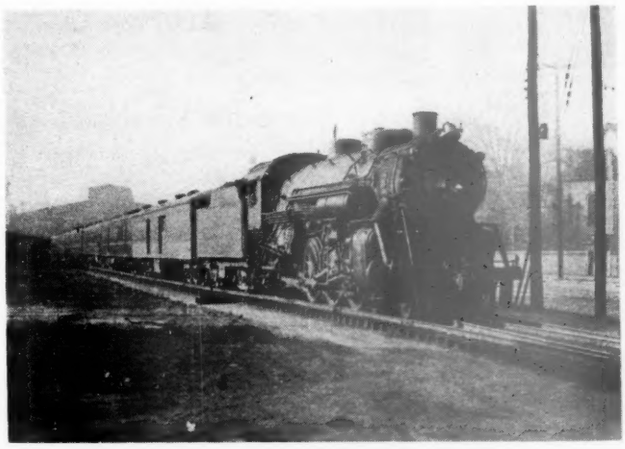


On the A. C. L. Near Augusta, Ga.

Traffic Developments During the Year

More Than 5,800 Air-Conditioned Cars Are Now in Service

Faster trains bring communities closer together by reducing travel time and facilitating the movement of freight

By Raymond A. Doster
Associate Editor

NOTEWORTHY improvements in service to meet public demand characterized both passenger and freight service in 1935. Among these improvements, the general speeding up of trains and the introduction of streamlined equipment were outstanding. While numerous record runs were made by the new trains in 1934, it was in 1935 that these fast trains were actually made available to the traveling public. The introduction of these trains and the general speeding up of other passenger trains in 1935 brought communities closer together by reducing the time required for travel, the distance between a number of business centers being shortened as much as 20 hours.

This effort to increase speeds applied to freight as well as passenger service. Not only was there a general speeding up of freight trains, but methods of handling freight were revised during the year to increase convenience and dispatch, until in many instances freight trains now render overnight service for distances up to 470 miles.

The first step last year to bring communities closer together was taken on January 2, when the Chicago & North Western placed its high-speed train, the "400," in service between Chicago and the Twin Cities, on a schedule of 7 hr. to St. Paul, Minn. (reduced to 6½ hr. on April 28), thereby effecting a saving of 3 hr. 20 min. On April 21, the Chicago, Burlington & Quincy and on May, 29, the Chicago, Milwaukee, St. Paul & Pacific placed the Twin Zephyrs and the Hiawatha, respectively, in service between these cities on the same 6½-hr. schedule. During the year, the same railroads made substantial reductions in the running times of other passenger trains in the Chicago-Twin Cities service.

As Much as Twenty Hours Saved

On June 6, the Union Pacific cut 20 hr. from the travel time between Chicago and Portland, Ore., when it placed its Streamliner-City of Portland in service on a schedule of 39 hr. 45 min. Between Chicago and St. Louis, Mo., the adoption of 5½-hr. schedules by the Wabash, the Chicago & Eastern Illinois, the Illinois Central and the Alton resulted in a saving of one hour. Between Chicago and Detroit, Mich., a saving of 30 min. was effected on June 2, when the Michigan Central and the Pennsylvania-Wabash placed the Twilight Limited and the Detroit Arrow, respectively, on a schedule of 5 hours.

Faster service was also provided between Chicago and Florida points. On January 2, the Penna.-L. & N.-A. C. L. placed a new train, the Florida Arrow, in service on a schedule of 27 hr. 10 min. between Chicago and Jacksonville, or 3 hr. faster than any previous schedule between these points. In December of last year, faster schedules for Chicago-Florida trains were adopted also by the C. C. C. & St. L.-So., the I. C.-C. of Ga. and the C. & E. I.-L. & N.-N. C. & St. L.

New York-Chicago Service Expedited

Between New York and Chicago, train schedules were shortened twice in 1935, the total time saved being 1¼ hr. On April 28, the Pennsylvania and the New York Central placed the Broadway Limited and the Twentieth Century Limited, respectively, on a 17-hr. schedule, and on September 29, they again reduced the time by placing these trains on a 16½-hr. schedule. Other trains operated by these railroads between Chicago and New York also were speeded up.

Likewise, between New York and St. Louis, 55 min. has been eliminated from the schedules of the Spirit of St. Louis and the Southwestern Limited, operated by the Pennsylvania and the New York Central, while the National Limited of the Baltimore & Ohio between St. Louis and New York was also speeded up, so that the fastest time between these cities is now 21 hr. 5 min., as compared with 22 hr. a year ago. New York Central and Pennsylvania schedules between Cincinnati, Ohio, and New York were also reduced 30 minutes.

Streamlined Trains in New England

In New England, the first streamlined train in that territory, the Flying Yankee, was placed in service by the Boston & Maine and the Maine Central, on April 1, between Boston, Mass., and Portland, Me., and Bangor, on a schedule of 1 hr. 50 min. for the 115 miles from Boston to Portland, and 5 hr. 55 min. for the 254 miles to Bangor, as compared with 2 hr. 5 min. and 8 hr. 30 min., respectively. On June 5, the New York, New Haven & Hartford placed its streamlined train, the Comet, in service between Boston and Providence, R. I., on a schedule of 45 min., as compared with the previous time of one hour. On May 26, this road reduced the time of its Yankee Clipper and its Merchants Limited between New York and Boston to 4½ hr., a decrease of 15 minutes. Its Boston-Washington train, the Senator, was also speeded up 10 min., while on September 29, it

placed three other trains between New York and Boston on a 5-hr. schedule.

New York-Washington service was also expedited by the Pennsylvania and the Baltimore & Ohio. On September 29, the Pennsylvania speeded up 44 trains in its electrified service until its Congressional Limited now makes the run of 225 miles in 3¾ hr., or 30 min. faster than a year ago. The Baltimore & Ohio, on June 24, placed a new streamlined train, the Royal Blue in service between Washington, D. C., and New York, on a schedule of 4 hr. to Jersey City, N. J.

New Trains Installed

While the speeding up of trains was carried out to a greater degree in 1935 than in any recent year, the number of new trains inaugurated likewise exceeded the number installed in any year since 1929. In addition to those already mentioned, are the streamlined Diesel-electric train, the Rebel, which the Gulf, Mobile & Northern placed in service between New Orleans, La., and Jackson, Miss., in July; and the Mark Twain, which the Chicago, Burlington & Quincy placed in service between St. Louis, Mo., and Burlington, Iowa, on October 28.

Arrangements were also made during 1935 for the inauguration of greatly reduced schedules between other western points this year. The Atchison, Topeka & Santa Fe purchased a Diesel-electric locomotive, which will haul the Chief between Chicago and Los Angeles on a schedule 12 hr. faster than its present schedule. The Union Pacific announced that it would place new streamliners, City of Los Angeles and City of San Francisco, in service in the spring between Chicago and the coast on a schedule of 39¾ hr. and another new train, the Streamliner-City of Denver, between Chicago and Denver, Colo., on a schedule of 16 hr., savings of 13 hr. 10 and 9 hr. 15 min., respectively.

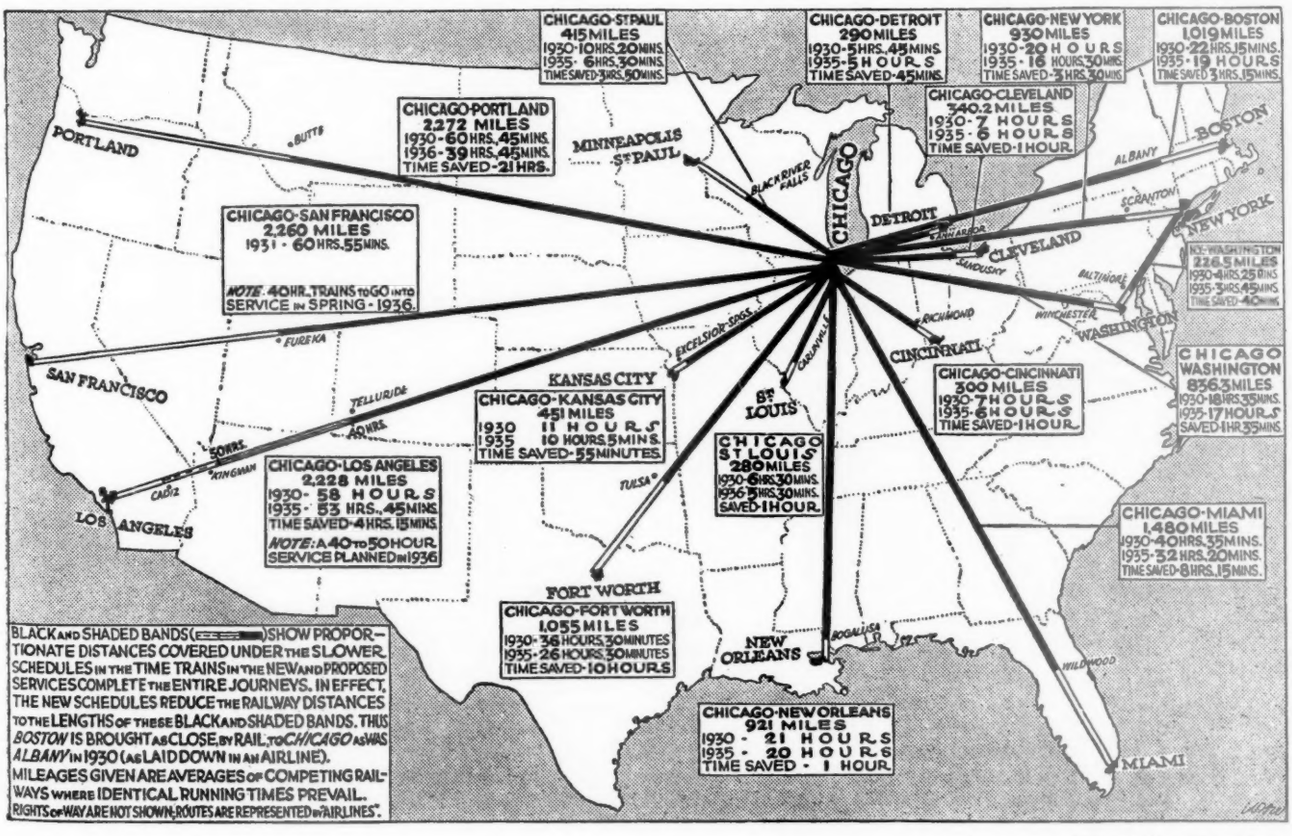
Aside from the widespread speeding up of trains and the addition of streamlined trains of new designs, service was improved in other ways during the year. New passenger cars were constructed and old ones were modernized. The air-conditioning of cars was continued at an accelerated rate in 1935, with the result that at the end of the year about 5,800 air-conditioned cars were in use and when summer business moves in 1936, the total will be still larger, the plans of the western railroads alone providing for the air-conditioning of 1,100 additional cars.

Lower Passenger Rates

While basic passenger rates were not changed materially during the year, the trend was toward lower rates. During the Interstate Commerce Commission's investigation of passenger rates, the Baltimore & Ohio expressed itself as favoring a reduction in basic rates, while other eastern lines continued to oppose any reduction. The railroads generally asked the commission to recognize the occasion for different rates in different sections of the country. A decision on these rates is expected to be handed down by the commission early in 1936.

On the western lines, in November, round-trip passenger fares to the Pacific coast were placed on the lowest basis ever offered in their history—1.3 cents a mile in each direction for coach tickets and 1.8 cents a mile for intermediate class tickets good in tourist cars. The western roads also decided to place tourist rates in effect next summer to and from Pacific coast points that

Railway Distances Are Shrinking



Courtesy Chicago Daily Tribune

would be the lowest rail passenger fares ever offered in any territory for any class of tourist travel. For round trips, these rates will average approximately 2 cents a mile for first-class tickets good in all classes of equipment, 1.6 cents a mile for intermediate class tickets good in tourist sleepers and 1⅓ cents a mile for tickets good in day coaches. The western lines, at a meeting on November 12, also voted to adopt the experimental low rate passenger fares in effect since July 1, 1933, as a permanent basic structure effective as new tariffs are filed and approved by state commissions to supersede the present tariffs which expire on March 31.

Another development in traffic activities during the year was the increased interest displayed in the advertising of passenger service. This was particularly true in the western territory where the railroads, in May and June, spent $367,945 on the first major co-operative advertising and publicity effort ever undertaken by American railroads. Its objective was to recapture lost traffic and to create new passengers; its principal selling points were air-conditioning, lower travel costs, time saving, dependability, comfort and safety. This advertising program was a powerful and dramatic presentation of the news of what has been done to provide America with the finest, most luxurious, most economical and safest form of travel. The climax of the publicity effort was Railroad Week, June 10 to 15, wherein more than 300 celebrations were staged in the West.

Freight Service Faster and More Convenient

Improvements in freight service in 1935 were no less outstanding than those in passenger service. Dispatch and convenience were more largely than ever before the aims of the railroads, and to accomplish these objectives faster schedules were inaugurated over the country generally. Between distributing centers and points within their entire trade area, overnight service with late acceptance of freight at the shipping point and delivery at destination early the following morning became the rule of many railroads' merchandise freight service in all parts of the country. Pick-up and delivery service was extended during the year, while steps were taken to meet the requirements of shippers and the need for efficient service by new and modernized equipment.

The most outstanding example of expediting freight service in 1935 and probably the fastest trains of their kind in the world are the Merchandiser of the New York Central and the Overnight of the Southern Pacific. On September 30, the New York Central placed the Merchandiser on a schedule of 11 hr. 50 min. between Niagara Falls, N. Y., and New York, requiring an average speed of 38.9 m.p.h. for the 461 miles. The Southern Pacific, on October 22, inaugurated the Overnight, a merchandise train to provide first-morning delivery of l.c.l. shipments from San Francisco, Cal., to Los Angeles. The train leaves San Francisco and Oakland after the regular evening closing hours and arrives in Los Angeles, 471 miles distant, at 8:10 the next morning. Returning, the train leaves Los Angeles after the regular evening closing hour and arrives at San Francisco and at Oakland at 8:45 a.m. and 9:17 a.m., respectively. Storedoor pick-up and delivery by the Pacific Motor Transport Company is furnished in connection with this service. On October 14, the Southern Pacific also established a new train for the overnight transportation of l.c.l. shipments from the San Francisco Bay area to Bakersfield, 313 miles, to supplement the overnight merchandise freight service put into effect in May between San Francisco Bay cities and San Joaquin Valley cities as far south as Fresno.

Another example of the extent to which the railroads speeded up their freight service in 1935 is afforded by the Missouri-Kansas-Texas which, on July 8, placed the Katy Rocket in service from Ft. Worth, Tex., and Dallas to St. Louis, Mo., on a schedule of 34 hr. for the 757 miles. The train leaves Dallas and Ft. Worth shortly after the close of business each day and arrives in St. Louis the second morning in time for deliveries at that point and in time to make connections with freight trains departing from St. Louis during the morning hours. Splitting at Parsons, Kan., the train provides midnight arrival at Kansas City.

Payment of Freight Bills Simplified

Another illustration of the manner in which freight service was improved in 1935 is the formation of the Chicago Railroad Freight Collection by 31 railroads in Chicago to facilitate the payment of freight bills. This association acts as a credit bureau and patrons within the Chicago switching district who are on the association's credit accommodation list and who receive bills from several railroads may settle all these accounts by one payment to the association.

The quality of freight service offered by the railroads in 1935 is reflected in the record of package car service from Chicago to all parts of the country. During the year, package cars were operated from Chicago to 800 cities on schedules providing for first-morning delivery at St. Louis; second-morning delivery at Minneapolis and Kansas City; third-morning delivery at points as remote as New Orleans, New York and Montreal, Que.; fourth-morning delivery at Houston, Tex., Miami, Fla., Boston and Portland, Me.; and seventh-morning delivery at Pacific Northwest and California points. Yet in spite of these markedly accelerated schedules, 97.9 per cent of the 329,892 cars dispatched during the first nine months of 1935 arrived at destination on time.

In summary, the aggressiveness of the railroads reached a new peak in 1935. This is reflected in the development of new passenger trains, the modernization of existing passenger equipment, the speeding up of both passenger and freight service, the air-conditioning of more passenger cars, etc.

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Photo by Bruce D. Fales

On the Maryland & Pennsylvania, near Oakleigh, Md.

Association of American Railroads

Careful study being given Co-ordinator's reports—Greater activity planned for this year

By H. F. Lane

Washington Editor

THE Association of American Railroads has had an active year in 1935 although many of the projects on which the greatest amount of attention has been centered are still in the formative stage and additional study will be necessary before results can be expected. Aside from the more or less routine matters of the kind heretofore handled by associations and organizations affiliated with the central organization, many of which have now been actually consolidated with it, and legislative matters, the most important subjects with which the association officers have had to deal have been those referred to it for study in the various reports prepared by Co-ordinator Eastman's organization. While these have been the subject of constant discussions with the Co-ordinator's staff and in some instances of preliminary reports, the association's final answers to the reports have not yet been made public. However, at the annual meeting in Chicago in November preliminary plans were announced for proceeding with several important matters which have developed out of the Co-ordinator's reports or at least have been given impetus by them.

The Co-ordinator's Recommendations

One of these was the recommendation that a plan of collection and delivery of merchandise freight on railroads, locally, jointly, and between different territories, be put into effect as soon as possible under such rate structures and to such an extent as the several territories may work out. It is understood that this will be handled regionally and that the railroads in the western district have made greater progress than the others.

Another was a recommendation that the various rate organizations proceed to such a revision of the rate structure on merchandise freight as will best meet competition in the territories.

Officers of the association were directed also to proceed and press to a conclusion as far as possible the unification of terminals, a subject on which a great deal of work had been done by Mr. Eastman's organization and railroad committees and on which the association had made many studies. The action was taken following an address by Mr. Eastman in which he expressed disappointment as to the slow progress being made. While he recognized that the labor restrictions of the emergency transportation act have been a serious obstacle in the way of effecting economies he also pointed out that in the two and a half years since the law was passed the death or retirement of thousands of railroad employees whose positions are thus no longer protected by the labor clause has provided some leeway.

It is understood also that the association is planning greater activity for this year in the direction of public relations work.

The Association of American Railroads as originally formed on October 12, 1934, was a consolidation of the American Railway Association, the Association of Railway Executives, the Railway Accounting Officers' Association, and the Bureau of Railway Economics, which then ceased to exist as independent organizations. On December 1, 1934, the Bureau for the Safe Transportation of Explosives and Other Dangerous Articles became merged with the association as a part of the Operations and Maintenance Department. The Eastern Group and the Western Group of the Presidents' Conference Committee on Federal Valuation were merged with the association on January 1 and July 1, respectively, and became part of the Finance, Accounting, Taxation, and Valuation Department. On October 1 the Railway Treasury Officers' Association was merged with the same department and became known as its Treasury Division.

The membership of the association at the time of its annual meeting included 139 Class I railroads, representing 99.1 per cent of the total Class I mileage and 99 per cent of the total Class I revenue, and 98 short lines, switching and terminal, electric, Canadian, and Mexican railroads, operating a total of 291,199 miles.

Much of the time of the officers of the association has necessarily been devoted to problems of organization and one of its departments, the Planning and Research Department, is not yet complete, although considerable study has been given to it. Pending the appointment of a vice-president of this department a Research Advisory Board was created on February 1 and further study of the organization of the department, including the question of traffic research work, has been made by a committee headed by C. D. Young, vice-president of the Pennsylvania. A Division of Equipment Research has been formed and has already initiated studies of many important subjects and a comprehensive program for further work. The Division of Competitive Transportation Research had been organized by the Association of Railway Executives.

The reports of the various departments and divisions of the association presented with the report of the board of directors at the annual meeting show the great variety of important questions dealt with and subjects studied during the first year of the association's existence, as well as a large number of important projects for action or investigation contemplated for this year's program.

Law Department

The Law Department has represented the railroads in numerous cases before the Interstate Commerce Commission, including the general rate advance case which resulted in a temporary emergency increase in rates estimated to yield $85,000,000 additional revenue, and in connection with the numerous bills before Congress.

The last Congressional session resulted in the passage of the motor carrier act, 1935, which had long been urged by the railroads, and of the railroad retirement act, the extension of the emergency transportation act, and others including provisions opposed by the railroads. A large number of other bills initiated by the railroad labor organizations but opposed by the railroads were also the subject of hearings before Congressional com-

mittees but were not acted upon and will be pressed at the coming session.

The 1934 railroad retirement act was declared unconstitutional by the Supreme Court of the United States, after the case had been presented by a committee of counsel appointed by the railroad association, and plans have been made for contesting the 1935 act before it takes effect on March 1.

The railroad association will endeavor to bring about the passage at this session of the bill to regulate water carriers and the Pettengill bill to repeal the long-and-short-haul clause of the interstate commerce act. It is expected that efforts will be made by Senator Wheeler at this session to press the passage of his government ownership bill, which is supported by the railroad labor organizations. A special committee of railroad counsel has been appointed to consider the subject and to arrange for an adequate presentation of the railroads' views if the bill is pressed.

Operations and Maintenance Department

In general the work of the Operations and Maintenance Department has been conducted during the first year of its existence largely with the view of economizing as much as possible and conserving the funds at its disposal because of the financial condition of the member roads. This department includes within its jurisdiction a large part of the organization of the old American Railway Association.

A Committee on Grade Crossing Elimination has cooperated with the Bureau of Public Roads in the development of rules and regulations incident to the $200,000,000 grade crossing program undertaken by the federal government under the emergency relief appropriation act and has supplied the bureau with such data and information as it desired from the railroads.

The Operating Division has planned to undertake a study of a general revision of the Standard Code of Train Rules, Block Signal Rules, and Interlocking Rules as soon as conditions justify the expense.

Division II—Transportation has held a number of committee meetings during the year to consider such special subjects as pooling of freight cars, demurrage supervision, cost of ownership of private cars, and unified operation of refrigerator cars. No annual session of the division has been held since 1930.

The "average per diem" plan for the settlement of car hire on box cars on the basis of the average of per diem payments previously made was put into effect on May 1. The purpose was to reduce to the minimum the avoidable empty mileage on box cars by increasing the use of foreign cars for home-route loading and to a certain extent its adoption was the association's method of meeting one of the principal problems for which the Co-ordinator's organization had proposed a car pooling plan. In general the plan is substantially an extension of the so-called "frozen per diem" plan which had been in effect for some time between certain eastern railroads with good results.

The plan contemplates that each railroad shall pay to each owner for the use of its box cars an amount equivalent to the average detention of such cars on its line during the corresponding months of the years 1932, 1933, and 1934. This permits the holding of box cars for a suitable load, in accordance with the Car Service Rules, without increasing the per diem expense, thus affording maximum opportunity for observance of Car Service Rules and for utilization of equipment, by providing suitable foreign box cars at industries, team tracks, and freight stations.

That the plan is accomplishing results is shown by the fact that the ratio of empty box cars to the total of all box cars moved has been decreasing, while at the same time the amount of freight transported per train has been increasing. While in December, 1934, the movement of empty box cars constituted 25.6 per cent of the total box car mileage, a study just made by the Car Service Division showed that in September the percentage was only 22.6. In July it was 23.4 and in August it was 22.7. Preliminary reports for October indicated a further reduction in the percentage for that month. On the basis of the reports for September it was estimated that the plan would result in a saving of approximately 246,000,000 empty car miles annually, and the Car Service Division is convinced that it is producing a substantial reduction in roadhaul and terminal expense. Some difficulties have arisen in the application of the plan but they are not regarded as fundamental or irremediable. The co-ordinator is awaiting the results of the average plan before proceeding further with the consideration of car pooling.

On recommendation of the general committee the Committee on Freight Handling Service of the Transportation Division and the Committee on Freight Claim Prevention of the Freight Claim Division were abolished and in their place there has been established a new Committee on Prevention of Loss and Damage under jurisdiction of the Freight Claim Division. The duty of the new committee is to study the causes of loss and damage to freight and to collaborate with the Freight Container Bureau, the Mechanical Division, and through the Car Service Division, with the Shippers' Advisory Boards in the formulation of recommendations for changes in existing rules and practices.

On recommendation of the Mechanical Advisory Committee of the federal co-ordinator and after a letter ballot the Rules of Interchange were modified as of January 1, 1935, to require that all cars in interchange service on and after January 1, 1945, must be equipped with A B type air brakes and that quarterly reports be made to the co-ordinator and the Interstate Commerce Commission showing the number of cars so equipped.

The matter of designs for light-weight freight cars is being given consideration by the Committee on Car Construction assisted by other committees of the division. A number of designs of light-weight cars have been considered in accordance with the first paragraph of Interchange Rule 3. The Committee on Car Construction, in co-operation with a committee representing refrigerator car operators, has established fundamentals of design for a standard 40-ton fruit and vegetable refrigerator car. Arrangements have been made with the American Railway Car Institute for the production of designs covering this car and it is expected that the car will be completed in time to be included in the report of the committee to the annual meeting of the division in June.

Effective July 1, the board of directors authorized the Freight Container Bureau to prescribe container specifications and loading rules for fresh fruits and vegetables, set maximum bulge pack limits, make studies and investigations of types and kinds of containers now being used, top icing and other conditions met with in the transportation of perishables, issue public dockets, hold public hearings, and arrange for and direct the publication of tariffs giving container specifications and loading rules to govern the entire country.

Traffic Department

With the organization of the Association of American Railroads and the creation of its Traffic Department the associated railroads obtained for the first time

in their history a central traffic organization, a new combined activity for the railroads which represented in no sense a consolidation or broadening of previously functioning organizations. The department began work about November 1, 1934, with the creation of a Traffic Advisory Committee composed of seven members from Official territory, seven from Western territory, five from the South, and the chairmen of the three major executive traffic associations. Later the traffic vice-president of the Railway Express Agency was made a member of the committee.

The Traffic Advisory Committee meets once each month to consider subjects of major importance which have been listed for discussion at the suggestion of the president, members of the board of directors, members of the Advisory Committee, chief or traffic executives of member roads, or by officers of the association. Based upon the action taken by the committee these matters are, when deemed desirable, referred to the territorial rate committees, executive traffic associations or other organizations for further study and action, and where justified with definite recommendations as to procedure. Thereafter such matters are followed up by the department and in special cases referred to the president for reference to the executive committee and the board of directors with definite recommendations. It is the purpose of the department and of the advisory committee to promote the best interests of the roads by unifying traffic policies, preventing wastes, composing differences and disputes, and in assisting them in all possible ways.

Territorial Associations Continue

It has not been the policy to take over the functions of the existing territorial traffic associations and rate committees, although in several instances the department has injected itself into matters before them where it appeared that practices detrimental to the railroad industry as a whole could be prevented. A considerable part of the department's work is carried on without direct reference to the advisory committee. Among the subjects to which attention has been given by the department since its organization are included: advertising policies, caravaning of automobiles, consolidation of off-line traffic agencies and ticket offices, designation of intermediate routing by shippers, dining car practices, divisions of rates, establishment of "all-commodity," container-car, truck body or other "space" rates, establishment of universal collection and delivery services, general revision of merchandise rate structure, mileage allowances on private cars, repeal of long-and-short-haul clause, simplification of tariffs, surveys of experiments conducted to recover and regain traffic to the rails, train-load rates on various commodities, use of containers of various kinds, miscellaneous traffic practices involving wastes, and the reports of the federal co-ordinator on carload freight traffic, merchandise traffic, passenger traffic, and railway traffic organization.

On December 10 the National Tariff Simplification Committee was appointed, composed of the principal tariff publishing agents, with J. G. Kerr, assistant to the vice-president—traffic, as permanent chairman and with a tariff expert of the Interstate Commerce Commission as an observer. The committee will make reports monthly as to progress to the chairman of the Traffic Advisory Committee. The chairman was authorized to use his discretion in creating similar territorial tariff simplification committees to co-operate with the national committee. The purpose is to make a thorough analysis of the present tariff situation, to investigate the widespread and persistent complaints from many sources regarding the intricacy of freight tariffs, and make changes in the direction of simplification as new tariffs are published.

Finance, Accounting, Taxation and Valuation

Effective on July 1 the Accounting Division was organized in the Finance, Accounting, Taxation, and Valuation Department, the membership being composed of the accounting officers of member roads. The primary purpose is to absorb the routine functions that had been maintained by the Railway Accounting Officers' Association and to stimulate the progress of the carriers toward uniformity in railway accounting procedure; in the trend of simplification and economy, in the adoption of standard forms, and in the furtherance generally of the profession and art of railway accounting. In the interest of economy no annual meeting of the accounting officers was held this year.

Under somewhat similar procedure the Treasury Division was organized in the department to carry on work of the kind carried on by the Railway Treasury Officers' Association. The department conducts researches and investigations of various railway methods and practices so as to obtain in the most efficient and economical manner the data necessary for the uses of management, government, and the public. Several of the reports prepared under the direction of the co-ordinator have received attention by this department jointly with other departments of the association. The work of both divisions is carried on, under the jurisdiction of the department, by voluntary committees of railroad officers.

At the request of the Regional Co-ordinating Committees the association is undertaking, under the direction of this department, the study of the proposal made by the Co-ordinator that the clearing house principle be applied to the business of the American railroads by the establishment of a central clearing house to effect a single net settlement between railroads of all inter-road accounts the establishment of a central bureau to audit and state the interline transportation accounts of all railroads, and the designation of one department of the federal government through which a simple expeditious settlement of all railroad accounts against all agencies of the government may be made. The department is having nine large representative carriers prepare a detailed study of all the factors in the present settlement plans for comparison with the requirements of a central clearing house which will be available in the near future. The study of the recommendation that a central auditing bureau be established is not considered practicable at this time but the suggestion for a single agency of the federal government is one in which the department is interested.

Fiscal Work and Cost Finding

The Co-ordinator has also transmitted to the Regional Co-ordinating Committees a report on railroad fiscal and related work recommending the establishment of a Transportation Fiscal Corporation and a Transportation Trust Company to do work for the railroads collectively. The Co-ordinator has stated that he will withhold any final conclusions on this subject pending advice of the regional committees and the report was referred to the association and is being studied by the department. A tentative report on "Cost Finding For Rate-Making In Rail Transportation," by John H. Williams of the Co-ordinator's staff, was submitted to the department and reviewed by the Accounting Advisory Committee. The report is also being considered by the advisory committee of the Traffic Department. The department is also collecting data on research work as to the extension of

(*Continued on page 25*)

Activities of the Co-Ordinator in 1935

Period of research work completed, Eastman's organization seeks to "sell" its ideas

By H. F. Lane

Washington Editor

AFTER over two years during which a large part of the time of the organization of the Federal Co-ordination of Transportation has been devoted to research work, in exploring the possibilities for the elimination of waste in railroad operation, or for the improvement of railroad revenue through greater co-operation and co-ordination of effort and by modernization of equipment, service, and rates, it has recently turned its attention to efforts to promote positive results from the work already done. This policy was announced by Co-ordinator Eastman shortly after his term of office had been extended for another year from June 16, but much of the research had not been finally completed and several reports are yet to be issued.

What is to happen after the expiration of the present term next June is still an open question, although it is expected that some recommendations along that line will be included in a report to be made to Congress, through the Interstate Commerce Commission and the President, shortly after the beginning of the new Congressional session.

Many Changes Urged

Based on its research work, the staff of the Co-ordinator has made many recommendations for changes in present practices covering a very wide field. Most of these recommendations, requiring agreement among the railroads on a plan for concerted action, have not been accepted by the railroads, although some of the ideas advanced have been put into effect, and Mr. Eastman considers that "the leaven is working." However, as he explained in announcing some changes in his organization last August, even if there were general agreement on their soundness and practicability it would take a long time to carry all of the recommendations into effect, although the opportunity for comparatively early accomplishment is much more promising in some cases than in others. Therefore, without abandoning any part of the program, he explained, it would be the aim of the Co-ordinator and his staff to start action through as many entering wedges as possible and attention was to be concentrated on the plans and projects which offered the most immediate hope along those lines.

While every effort would be made to co-operate and work in harmony, so far as reasonably possible, he said, with the Regional Co-ordinating Committees and the Association of American Railroads, contact is being maintained also with the individual railroads and particularly with those managements which are regarded as "most enterprising and progressive." "The object will be to get results," he said, "without preoccupation with the credit for the results. It is realized that step-by-step progress in the solution of certain of the problems may be necessary."

As the research work has approached a conclusion there has been a gradual reduction in the Co-ordinator's organization. Several men in important positions have resigned without being replaced and in other instances those who have left the organization have been succeeded by their assistants.

Probably the most important tangible accomplishment of the Co-ordinator so far was represented by the passage by Congress of the motor carrier act, which had been under consideration before Congressional committees for ten years. In fact it may be said that Mr. Eastman has been more successful in persuading Congress to follow his recommendations than he has with the railroads since this was the most essential feature of his legislative program. Congress also passed the amendments to the bankruptcy law pertaining to railroad reorganization procedure which he had advocated, although it failed to follow his advice on the pension bill and has so far taken no action on several of his other legislative proposals.

During a large part of the time since the emergency act has been in effect the restrictions against reduction in employment in Section 7b have been a bar to the accomplishment of important economies under it, but recently Co-ordinator Eastman has expressed the opinion that a more serious obstacle is the attitude of many of the railroad managements toward co-operation and co-ordination. He has also pointed out that because of the way they were drawn the labor restrictions of the law become less drastic with each succeeding year because the positions of employees who have died or retired since May, 1933, up to 5 per cent of the total for each year, are not protected by the law and that this now allows a "leeway" of some 100,000 men who could be displaced under the law.

Eastman Urges Negotiation With Employees

In a talk at this meeting of railroad executives at Chicago in November Mr. Eastman urged greater activity on the part of the railroads in the direction of co-ordination, and in a further explanation of his views included in a recent letter to the editor of the Locomotive Engineers Journal he said that even if the railroads obeyed the law literally they could obtain the benefit of a part of the economies at once and eventually obtain the benefit of all of them. The most desirable course to pursue, in his judgment, he said, would be to negotiate with the employees for the protection of those displaced by co-ordination projects, especially since the present law expires on June 16, and shortly afterward the Railway Labor Executives' Association appointed a committee to confer on the subject with the Association of American Railroads. George M. Harrison, chairman of the labor association, said he hoped an agreement could be

reached but that if not an attempt would be made to obtain permanent legislation.

Mr. Eastman also suggested that the railroads could resist the provisions of Section 7b in the courts if they desired, although he did not recommend such a course and thought they would make a serious mistake if they did so. He emphasized that he had in mind that labor displaced by co-ordination projects should be paid under some form of dismissal compensation along the lines proposed in a bill he had recommended at the last session of Congress, which would take somewhat more than the economies of the first year, but the plan was opposed both by the railroads and by the labor organizations.

Mr. Eastman has sought to quiet the fears of the labor organizations that he contemplated any wholesale dismissal of employees by pointing out that in addition to the protection of 7b it would be physically impossible for him to prepare and issue orders except in a few test cases and that if orders were necessary the opposition would inevitably result in protracted hearings and delay before anything was actually done. However, he has frankly urged the railroad employees to co-operate with the railroads rather than oppose labor-saving projects, on the ground that in the long run the industry will present more employment opportunities if it is allowed first to strengthen its position in competition with other forms of transportation.

Orders Impracticable

The emergency act makes it the duty of the Co-ordinator to "encourage and promote or require action on the part of the carriers" which will, among other things, "avoid unnecessary duplication of service and facilities of whatsoever nature and permit the joint use of terminals and trackage." However, as Mr. Eastman has pointed out, so far he has promoted and encouraged but has not required.

Although he has frequently in public addresses spoken of the possibility of issuing orders he has also explained why they have not been forthcoming by saying it was "questionable whether these co-operative plans, or some of them, should be enforced by fiat, either the fiat of a central railroad organization or the fiat of the government," and that he doubted whether the power of the Co-ordinator "should be used to compel comprehensive and important changes in methods of railroad operation or management which are dependent for their success upon keen administration and to which railroad opinion is generally hostile." To accomplish results in such cases, he said, "it would be necessary to change the men as well as the methods." While he indicated to the railroad executives that he might feel it his duty to issue orders in default of action on their part in harmony with the provisions of the emergency act, he also indicated that he had no great expectation of important accomplishments through such procedure.

The one order he has issued, in October, 1934, prohibiting a change in train service between Chicago and Florida which he thought would result in duplication, was a purely negative one which did not require any comprehensive follow-up of co-operation, planning, or administration such as would be involved in any large program of co-ordination projects. Moreover, in a report made last June Mr. Eastman said that with a single exception the railroads' Regional Co-ordinating Committees had not recommended that he issue any orders.

As the law now stands, the office of Co-ordinator expires on June 16 and Mr. Eastman's views as to the course which should be pursued after that date will be expressed in a report to be made to Congress shortly. This report will also include an account of the activities of the organization for the past year and additional recommendations for transportation legislation, following up and possibly modifying to some extent the recommendations made last year.

Last year Mr. Eastman recommended a bill providing for a reorganization of the Interstate Commerce Commission and the designation of one of the commissioners as a permanent Co-ordinator, with the power to issue orders in reserve, but the idea met with much opposition and was not seriously considered by the Congressional committees. The railroad association opposed the idea of continuing the office of Co-ordinator but has since expressed approval of part of the plan for reorganizing the commission.

After the emergency law had been extended and it was decided that he should carry on for another year Mr. Eastman said he would do to the best of his ability "with malice toward none and charity for all, including the railroad executives," and that "if they wish to co-operate they will find me waiting for them before they even start." He emphasized, however, that he has "framed no indictment of railroad management as either incompetent or unprogressive," saying that "there is plenty of ability among its officers" but that new conditions had swept down upon them suddenly and that "the trouble lies, not in the ability of the railroad officers, but in their attitude toward the prime essential of improvement under present conditions, namely co-operation and co-ordination."

In urging greater co-operation among the railroads Mr. Eastman recently has been stressing the competitive menace to their traffic possibilities in private transportation, the ability of large corporations, small concerns, and even individuals to provide their own transportation, and the changes proposed in the recommendations prepared by various sections of his organization are designed to meet that situation. "The conclusions drawn may not all be sound," he says, "but at least we have brought to the surface necessary raw material and shown how it can be used in working out railroad salvation. Personally, I entertain no doubt whatever that there are many ways in which the railroads can save money, give better service at less relative expense, and adjust their rates so that they will be much better suited to present conditions and bring in more revenue. The opportunities lie in greater co-operation and co-ordination of effort in many different directions, in the use of new types of motive power and equipment in both freight and passenger service, and in the utilization of other means of transport where they will serve the purpose better than the rails."

Mr. Eastman says he has not lost faith that the results desired can be accomplished. "The fact that the railroads have formed the new Association of American Railroads with its broader powers," he said, "is evidence that they are beginning to realize what present conditions demand. From now on it is largely a matter of education and selling ability. If a few practical tests of co-operation and co-ordination can be made, I am confident that fears will be dissipated. I shall do all that I can to help, encourage, promote, and stimulate movement in the right direction, but the railroads must realize that in the last analysis the choice between progress and stagnation is very largely theirs."

Some Reports Not Yet Issued

At the time his term was extended for a second time last year Mr. Eastman said that much of the work of research had been done and that the time had come to "translate its results into action" but it has developed that, with more time available, some of the studies being made by his various sections have required a good deal more research and some of the reports have not yet been

issued, although they are expected early in the new year. Some have been submitted in tentative form to the railroads and other interested organizations for criticism before being made public.

It was evident at the time the law was passed that the severe restrictions upon reductions in railroad employment "by reason of any action taken pursuant to the authority of this title" would be an obstacle to immediate accomplishment in the elimination of expense, and that because of this situation little in the way of initiative could be anticipated from the Regional Co-ordinating Committees, especially after Mr. Eastman ruled that projects that might be agreed upon by the railroads came within the restriction if they had been included in the lists referred by him to the committees. However, in a few instances co-ordination projects have been worked out by groups of roads after agreements with the employees for compensating those laid off. In the circumstances the Co-ordinator concluded that he could accomplish most by carrying on and promoting intensive research into the possibilities of eliminating waste, directing his aim particularly at the modernization of railroad operation and service.

Section of Transportation Service

The report of the Section of Transportation Service on "Merchandise Traffic," completed and published in May, 1934, was originally referred to the co-ordinating committees, who found the plan too far-reaching and radical but eventually it was referred to the Association of American Railroads for further study and the subject has received active consideration during the past year.

The report on "Passenger Traffic," published in January, 1935, containing many recommendations for reductions in fares, improvements in service, and changes in operating practices, including pooling, intended to attract passenger traffic back to the rails, was also referred by the Regional Co-ordinating Committees for study to the Association of American Railroads. Meanwhile the Interstate Commerce Commission has conducted a comprehensive investigation of the passenger fare situation on which an early decision is expected.

The report on "Freight Traffic," dealing with the handling of carload traffic not only by the railroads but by water carriers, motor trucks, and pipe lines, was published in June, 1935. The report includes studies of the costs of various phases of operation in each form of transportation and outlines principles for a revision of railroad rates which is urged to simplify them and adapt them to present conditions and the costs of competitive carriers. Other parts of the report recommend greater use of container service. After an analysis of costs showing the expenses and delay entailed by yard and terminal service, the report discusses means of reducing this expense by the unification of terminal operations, by the use of trucks for much terminal service, by the use in certain instances of shorter and more flexible trains, and by the movement of trainload quantities in other instances at "cargo" rates. Much attention is given to the opportunities for substituting truck for rail service, not only in terminals but on the line, wherever the truck can be operated more cheaply and more conveniently.

A report on "Railway Traffic Organization," outlining means whereby through greater co-operation with each other and through better organization methods and the selection and training of personnel it was believed that the railroads could obtain beter results at less expense, was made public in August.

Following completion of these reports the section has devoted much of its time to contacts with individual railroads in the effort to locate the best opportunities for initiating action along the lines already recommended in the published reports and to promote such action.

Terminal Unification

For the study of opportunities for economy in railroad operation which are localized to particular places or districts the Co-ordinator established a Section of Regional Operations, which is now in charge of V. V. Boatner. This section has promoted and supervised studies by the railroads of opportunities for economy through unification of terminal facilities and operation at places served by two or more railroads. The basic work has largely been done by numerous committees of railroad officers.

A progress report was issued in February and a second more complete report in July. It was estimated that without detriment to service as much as $50,000,000 annually could be saved by terminal unifications which are physically possible, and that this amount could be materially increased if co-ordination of service were extended beyond the terminal districts. The Co-ordinator believes that the obstacles and difficulties are by no means insuperable but that time and negotiations will be required to work them out. At three typical places, Birmingham, Ala., Indianapolis, Ind., and Kansas City, Mo., such negotiations have, at the insistence of the Co-ordinator, been undertaken.

Railroad committees, under the general supervision of the Section and Regional Operations, have been at work in each region surveying the shop situation with a view to determining the economies possible through concentrating the work in the better located and equipped shops, and introducing improved mechinery and methods. Incident to the latter study, a voluntary committee appointed by the National Association of Machine Tool Builders has made an illuminating report on the equipment of one typical railroad shop.

Car Pooling

The report of the Section of Car Pooling proposing a plan for the pooling of box cars was issued in October, 1934, and considered first by the co-ordinating committees and later by the Association of American Railroads. The association, after a special study of unnecessary empty hauls, reached the conclusion that the amount is much less than the section estimated and on May 1 adopted a plan of average per diem payments for the use of foreign cars which it believes is effecting a substantial saving in empty mileage. It rejected the pooling plan, largely on the ground that it would remove maintenance from the control of the individual railroads and make it more difficult for them to meet the service requirements of shippers.

While the section and the Co-ordinator were not convinced that the objections are sound it was decided to await the results of the average plan before proceeding further. The section has this year made a special study of the cost of locomotive repairs and the wide variations in such costs as between different roads and regions, which was published on November 27. This includes a recommendation that a committee of experts representing the railroads, the locomotive builders, and the federal government be appointed to make an early report upon the kind of information needed, the manner in which it should be kept, and the way in which it may be used with respect to fuel economy, locomotive utilization, and the economic life of steam locomotives.

It was announced in August that the Section of Purchases had been given a broader field of activity and

its name was changed to the Section of Property and Equipment. In addition to the work which the section had carried on, looking toward the better handling of purchases, stores, and scrap, and progress in standardization, simplified practice, and central scientific research, it has been given the duty of concentrating on the container problem and also on the better utilization of railroad and shop equipment.

A study has been made of the methods followed by the railroads in the reclamation and sale of other disposition of scrap and another of the methods used by railroads in handling stores. The report indicated many methods of economy in methods of physical handling, accounting, and organization. In January it was announced that the Association of American Railroads had approved and put into effect a recommendation made by the Co-ordinator that the delivery of material and supplies to the point of use be organized and operated by the stores department unless it can be clearly demonstrated that at some particular point conditions make such procedure uneconomical.

A study in the mechanical field was instituted through a Mechanical Advisory Committee headed by L. K. Sillcox, vice-president of the New York Air Brake Company, and including the director of the Bureau of Safety of the Interstate Commerce Commission and four railroad mechanical officers. This study was described as principally for the purpose of determining the type of improvements in motive power and equipment which seem to offer most promise in the light of railroad experience and upon which attention can most readily be concentrated by the railroads.

The complicated interline accounting between railroads has been given much study, with the help of N. B. Haley of the staff of the Interstate Commerce Commission and a recommendation for simplification in the handling of disputed divisions of joint rates has been followed by railroad action which promises to improve the situation materially and save expense. In an elaborate report by Mr. Haley made public in March, 1934, the desirability of establishing a clearing house for the handling of intercompany settlements generally was urged and a plan was outlined. A joint committee of railroad accounting and treasury officers made an unfavorable report on the proposal, but it was afterward referred for further study to the Association of American Railroads.

Opportunities for material savings through combined railroad effort in the kinds of work now performed by numerous fiscal officers in New York were the subject of another study under Mr. Haley's direction.

The emergency act gives the Co-ordinator authority over allowances to shippers and charges for accessorial services, with a view to avoiding undue depletion of net earnings. Some important phases of this matter have been under investigation by the commission and therefore have called for no present action by the Co-ordinator. Others have been investigated by his staff, including such subjects as dockage charges, wharfage charges, handling, loading and unloading charges, warehousing and storage charges. In a report to the Regional Co-ordinating Committees the Co-ordinator recommended the strengthening of present demurrage supervisory bureaus and the establishment of additional ones, for the better collection of demurrage charges and the elimination of abuses. The committees did not favor the change, although they recommended certain other changes which they felt would improve demurrage handling. The Co-ordinator's traffic assistants have taken up numerous other traffic matters and in a number of instances have made recommendations which have been followed by the railroads with consequent gains in revenues or the saving of unnecessary expense.

A study of railroad cost-finding has been made under the direction of J. H. Williams with the help of the commission's Bureau of Accounts and a voluntary advisory committee of railroad accountants and outside experts, and a plan for a continuous routine of railroad cost finding has been prepared which is being subjected to the test of criticism not only from the advisory committee but from others interested in the subject.

A special study of railroad-owned grain elevators was made for the Co-ordinator by J. A. Little, who reached the conclusion that by pooling ownership and operation of the elevators at certain of the large grain markets much better financial results could be obtained. An association of lessees of these elevators made a counter study and reached opposite conclusions and the Regional Co-ordinating Committees have also made an unfavorable report on Mr. Little's recommendations. Further information on certain points was obtained and is to be made the basis of a supplementary report by Mr. Little.

Legislation Recommended

In accordance with his duty to recommend further legislation for the improvement of transportation conditions generally, the Co-ordinator has made three major reports, transmitted through the Interstate Commerce Commission to the President and Congress, and three minor ones. The first report was transmitted on January 20, 1934, the second on March 10, 1934, and the third on January 23, 1935.

The third report, after a general review of the transportation situation, rejected the plan for compulsory consolidation of the railroads into a very few systems and also a plan for government acquisition and operation of the railroad properties, and recommended a plan for extension and improvement of the present system of federal regulation of privately owned and operated carriers. With the report were submitted bills for the regulation of motor and water carriers, a reorganization of the Interstate Commerce Commission, a plan of dismissal compensation, revision of the bankruptcy act, and several minor changes in railroad regulation. The motor carrier and bankruptcy bills were passed and the others, probably with some modifications, will be pressed again at this session.

Among the reports yet to be issued are one dealing with a plan of unemployment compensation for transportation employees generally, prepared by the Section of Labor Relations, a report on which the Section of Research has been working for over two years as to the extent to which the various transportation agencies have received and are receiving financial aid from governmental sources, directly or indirectly, a short-line study, also the work of the Section of Research, and a more complete report on the question of retirement pensions. The report on the subsidy question has recently been undergoing final revision prior to publication. It proved to be a huge and highly involved undertaking, especially with respect to the highway carriers, and because of the complexities encountered the practice was followed of submitting various sections of the report for criticism to interested parties having knowledge of the subject matter. When the final results are available they may lead to recommendations for legislation.

In collaboration with the Department of Labor the Sections of Research and Labor Relations have been undertaking to prepare a comprehensive report on wages and working conditions of transportation agencies other than the railroads which may also lead to legislative recommendations.

I.C.C. Begins Motor Carrier Regulation

Practical effects of new law, however, will require time to develop— New bureau being organized

By H. F. Lane
Washington Editor

ONE of the outstanding developments of the year 1935 from the railroad standpoint was, of course, the enactment of the motor carrier act, 1935, providing for regulation by the Interstate Commerce Commission of interstate transportation by bus and truck on the public highways, which the railroads had urged for some ten years. However, although the new law was by its terms effective on October 1, a provision was inserted authorizing the commission to postpone the effective date of any part of it and the commission has found it necessary to suspend several of its most vital sections. As a result it will be necessary to wait for a time well into the new year before it will be possible to gain much of an impression as to how this new development is to work out in actual practice.

Lack of Appropriation a Handicap

After passing the law with much less difficulty than had been anticipated, in view of the controversies the proposed legislation had aroused beforehand, Congress adjourned about the end of August without appropriating the funds for its administration, and although arrangements were later made by which the commission could draw upon its regular appropriation for half of the $1,250,000 which had been proposed for the purpose in the appropriation bill not a dollar of the amount was available to put anyone on the payroll before the law went into effect on October 1. This handicapped the commission in building up its new organization and in providing office space for it, with the result that almost the first official action of the commission was to extend until December 1 the effective date of Sections 216, 217, 218, 219, and 223 of the new act.

These sections deal with the filing and observance of tariffs and schedules showing rates, fares, and charges and related matters, as well as the issuance of receipts or bills of lading and the collection of charges. This action was taken on September 19 and on November 9 another order was issued further extending the time so that tariffs need not be filed until January 15, to become effective 30 days later. The postponement, the commission said, was primarily due to its inability to make the necessary preparations incident to the filing of tariffs and to give operators additional time in which to file their tariffs and schedules.

On January 2 in response to numerous requests, the commission issued an order further extending the effective date of these sections, and requiring that tariffs be filed on or before March 2, effective April 1.

Filing of Applications Delayed

Similarly the commission extended to October 15 the effective date of the sections pertaining to the filing of applications for certificates and permits to operate, which meant that operators entitled to such certificates or permits, because they were in bona fide operation before June 1 or July 1 under the "grandfather clause", were allowed 120 days from October 15 in which to file their applications, as the preparation of the necessary forms, calling for voluminous information regarding the operations covered, was not completed until shortly before that date. Many conferences with representatives of the motor carriers were necessary before the forms were finally put into satisfactory shape, and the railroad lawyers also took an interest in the matter in an effort to make certain that all necessary information as to the status of existing operators would be called for.

Even after the forms were issued several weeks elapsed before the applications began to come in in any large numbers, possibly because many of the operators were unfamiliar with such procedure, and at this writing, although more than half of the period has elapsed, only a little over a thousand have been received at the commission's offices. Estimates had been made that it might be necessary to handle over 200,000 applications and the commission's organization has been prepared to handle them at the rate of about 500 a day. Some observers have been inclined to draw the conclusion that the number of operators that will file applications has been over-estimated but it is probably much too early to form opinions on the subject.

Separate Organization for Motor Carriers

Every effort had been made by the commission to be forehanded and be prepared to carry out the new duties imposed upon it. Immediately after the law had been signed by the President it announced the creation of an additional division to which it assigned the work and functions arising under the act, and the organization of a new Bureau of Motor Carriers. The new division is now known as Division 5 and consists of Commissioners Eastman, Caskie, and Lee. Mr. Eastman, in spite of his many duties as federal co-ordinator of transportation, was made chairman of the division at the outset in recognition of his close connection with the drafting of the legislation, and John L. Rogers, who had been his executive assistant, was appointed director of the new Bureau of Motor Carriers.

On October 8 the commission was able to announce the appointment of the chiefs of the ten sections created in the new bureau, to deal with certificates and insurance, traffic, accounts, complaints, finance, safety, research, statistics, legal and enforcement matters, and administrative matters, and shortly afterward the location of 16 district offices in various parts of the country to carry out the idea of decentralizing the regulatory work as much as possible and to make it possible to maintain convenient contact with the joint boards of state representatives contemplated by the law.

The central organization in Washington, now approximately complete, is to include some 300 employees and approximately an equal number will be employed in the district offices. The commission was given authority by executive order to select men for a few of the key positions without civil service examinations, but most of the employees have been recruited through civil service

procedure and applications for the positions of district director and district supervisor were received on December 2. In addition to the 16 district directors, who are to have salaries of $5,600 a year, there are to be 76 district supervisors, with salaries of $3,800 a year. Each district office also is to have a joint board agent, one or more rate and tariff agents, one or more accountants and the necessary stenographic and clerical assistance.

The commission has received a large number of inquiries concerning its requirements as to the annual, periodical, or special reports or systems of accounting, but Director Rogers has advised the American Trucking Associations, Inc., that it will be several months before the classifications of accounts and forms of reports can be issued in their final form. Meanwhile the details of these and other regulations which it will be necessary for the commission to issue are receiving careful consideration and have been the subject of many conferences between representatives of the Bureau of Motor Carriers and of the bus and truck organizations.

Enactment of the new regulatory law has created numerous new problems for the motor vehicle operators, particularly the truck operators, who are much less highly organized than the bus industry, and the American Trucking Associations, Inc., representing the truckers, has increased its organization and appointed several new committees to deal with the commission's organization in working them out. Naturally one of the first and most important questions to be faced was that as to the kind of rates to be filed with the commission. Some of the trucking interests had hoped that the commission would help them with this problem but the law does not contemplate that the commission shall initiate rates but only that it shall regulate them.

The Rate Question

The initial tariffs may be filed as the motor carriers may see fit, subject to the rules and regulations which the commission will issue to govern the manner in which rates shall be stated and published, and the initial rates may not be suspended by the commission, although they will be filed with the knowledge that the commission may later change them after complaint or other appropriate proceedings. The commission felt that it could not make any decision in advance without giving full hearing to all concerned and many difficult questions would have to be considered.

Bus fares have become fairly well stabilized and for a long time most of them have been covered by published tariffs but rate practices among the truckers have been very irregular in most instances and at the outset there were wide variances of opinion among the truck operators as to whether, in making their charges, they should use corresponding railroad rates as a guide or be governed by the cost of their own operations plus a fair profit. The national rates and tariffs committee of the American Trucking Associations at first adopted a tentative resolution recommending that truck rates be developed "on a basis of reasonable truck operating costs, plus a reasonable profit, and applied under a truck classification of commodities."

This was discussed at a convention of the association in Chicago in October without any general conclusion being reached, which means that varying principles will probably be adopted by different truckers and in different regions, although it is expected that some degree of uniformity will be attained in tariffs to be published by regional joint tariff-publishing agencies. In November a decision was reached to draft a national motor freight classification of commodities, differing materially in many respects from railroad classifications, and designed to preserve for the shipping public all the natural advantages of truck transportation which they have at present. The committee has been hard at work on its task ever since. The new classification will be published in two books, one containing less-than-truckload ratings and another showing ratings for volume shipments.

In addressing the trucking association in Chicago in October Commissioner Eastman pointed out that in filing their rates the truck operators must take the risk that they can defend them if attacked, just as the railroads do, adding that "in the event of an attack, the act makes it clear that the commission must give all due consideration to cost of service, and my own guess is that it will eventually be the dominant factor in fixing rates, if only because many shippers will truck their own freight if your charges go much above cost of service."

Some operators had expressed a desire to have the commission determine what regulations it would prescribe with respect to hours of service of employees and what its requirements would be with respect to surety bonds, insurance, and the like, before they were called upon to file their rates but it is expected that hearings will be required on such matters and it was felt that the filing of tariffs could not be delayed until such questions are settled.

Association of American Railroads

(*Continued from page 19*)

the application of accounting machines and improved methods of recording and auditing of freight, passenger and disbursement accounts.

The Competitive Transportation Research Division of the Planning and Research Department has done constructive work in developing a program for the determination of highway costs and the allocation of these costs to different types of motor vehicles which are competing with the railroads. This is the foundation work in determining fair competitive conditions. The principles and methods have been presented to the Co-ordinator's staff in connection with the study of highway subsidies and has been applied in a study of highway costs in different states. In addition a complete set of principles has been developed for the determination of costs of waterway improvements.

The Division of Equipment Research is a new undertaking and the period from February 1 to date has been a formative one. Therefore a major part of the time and effort has been devoted to formulating policies, surveying the field, and making co-operative contacts. A proposed research program has been submitted to the board of directors concerning the following projects: Diesel electric locomotives, main crank-pin failures, Cole's ratios, lubrication of cars and locomotives, welding and cutting, air conditioning, and air resistance and streamlining. Other subjects suggested for further study include: Containers, road-rail vehicles, shop equipment and practices, old locomotives, old passenger and freight equipment, light-weight rolling stock, passenger trains, and mechanical advisory committee. The division is analyzing the report issued by the Co-ordinator on "Freight Co-ordination Motive Power."

It was announced on December 28 that the directors had authorized the study of air-conditioning with a view to ascertaining what type or types are best adapted for railroad use, whether any improvements can be made, which type provides the greatest comfort to the public, and which are the most economical to install and operate.

Equipment Reserves Continued to Decline in 1935

New locomotives and cars, though few in number, show interesting trends

By C. B. Peck
Mechanical Department Editor

ALTHOUGH not remarkable for the volume of equipment orders placed by the steam railroads, the year 1935 witnessed a number of interesting developments affecting trends in the future design of motive power and rolling stock. During the year the first serious trials of Diesel-electric motive power in relatively high capacity units were made in road passenger service; a steam locomotive for passenger service was produced which is expected to develop 5,000 cylinder horsepower, and the light-weight, high-speed motor train began to outgrow some of its early distinguishing characteristics. Meanwhile, the railway inventory of motive power and rolling stock continued to shrink, at the same time getting older at the top, if not at the bottom, and the serviceable reserve to approach appreciably nearer the hypothetical vanishing point which, like infinity in mathematics, may be approached, but, it would appear, never quite reached.

High Spots in New Equipment

The two 3,600-hp. and one 1,800-hp. Diesel-electric locomotives which were completed during the year have demonstrated the ability of this type of motive power to function successfully in road service. Although these specific locomotives are still on trial, their service has already been ample to justify the belief that the future competition between steam and the Diesel-electric locomotives in road service will be in the realm of economics rather than in that of design and physical performance.

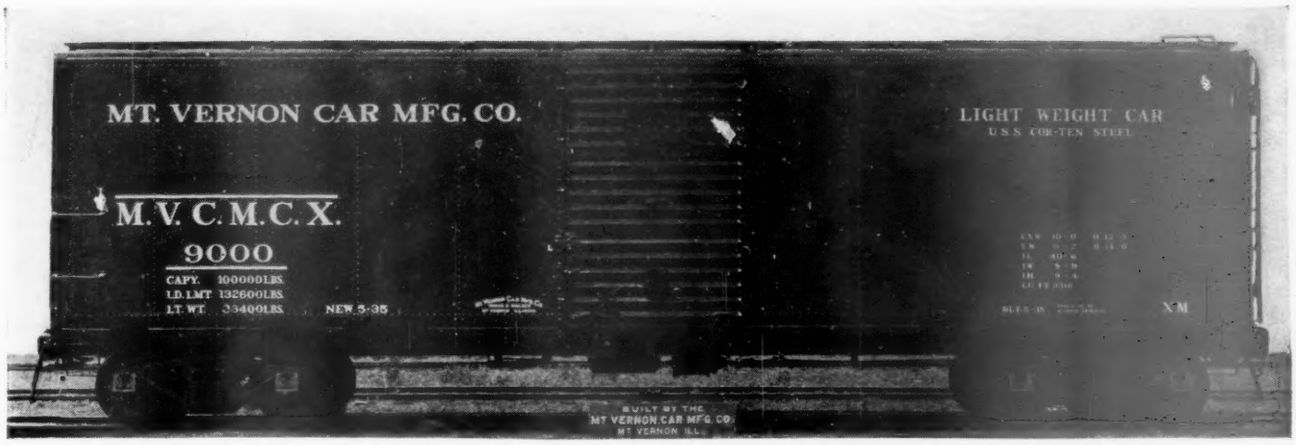
The five 4-8-2 passenger locomotives recently deliv-

Number of Locomotives and Road Locomotive Miles, 1928-1935

	Number of locomotives								Road locomotive-miles, Avg. per mo. (000)
		Unserviceable		Stored serviceable		In active service			
	On line Dec. 1	High	Low	High	Low	High	Low	Avg.	
1928	58,689	4,800	4,327	7,490	4,958	49,548	48,338	48,407	102,127*
1929	56,662	4,545	4,002	6,482	4,041	48,716	47,188	47,906	102,732*
1930	55,380	5,102	4,112	8,462	5,958	46,153	41,816	43,837	92,700
1931	53,791	6,836	5,216	10,361	9,531	38,938	36,054	37,545	79,850
1932	51,648	9,316	6,990	11,660	9,008	35,675	32,027	33,581	67,230
1933	49,602	11,203	9,558	9,419	5,193	33,777	31,222	32,595	65,130
1934	47,320	11,259	10,616	5,913	4,590	33,196	31,567	32,580	67,900
1935	45,657**	10,582	10,329	4,778	3,725	32,281	31,223	31,627†	67,980‡

* For the peak month of October road locomotive-miles amounted to 109,977,000 in 1928 and 109,601,000 in 1929.
** Report of October 1.
† Average for 10 months.
‡ Average for 9 months.

The 1,800-Hp. Diesel-Electric Locomotive Built for the Baltimore & Ohio by the Electro-Motive Corporation—Equipped with Two 900-Hp. Winton Engines



Light Weight Box Car Built by the Mt. Vernon Car Mfg. Company Using U. S. S. Cor-Ten Sheets

ered to the Chesapeake & Ohio are not the heaviest locomotives of this type, either in point of weight on drivers or of total weight of the engine. Their boilers, however, are the most liberally proportioned of those of any such locomotives yet built, with a combined heating surface of 7,880 sq. ft., and provide a heat transfer capacity which is expected to develop 5,000 cylinder horsepower. If their apparent capacity is fully realized, these locomotives will be the most powerful passenger motive-power units in America with the exception of the new electric passenger locomotives built this year for the New York-Washington electrified service of the Pennsylvania. While the present continuous rating of the latter locomotives is under 5,000, they have a short-time rating available for peak loads considerably in excess of that amount.

One of the outstanding features in the equipment field during 1935 was the development of freight-car designs utilizing the weight-saving possibilities of the so-

car construction during the year, with appreciable reductions in weight.

Two events recorded in the orders for passenger equipment are of particular significance in their relation to future trends. The first is the building of a passenger coach for use interchangeably with conventional passenger-train cars, of the light-weight stainless-steel type of construction, which previously has been confined to the building of the articulated type of trains. The other is the growth of the articulated type of train not only in size and capacity, but also in power demand, to a point where the need for flexibiilty is beginning to curtail the application of the articulation feature. A development which started with three articulated body units, in the end of one of which was neatly tucked a 600-hp. power plant, has successively grown to require first a 900-hp. and then a 1,200-hp. power plant, in each case occupying a full body unit, and now to require a 2,400-hp. power plant which fully occupies two complete vehicles.

Freight Cars on Line and Surpluses, 1928-1935

	Number of Freight Cars					Car Surpluses			
		Unserviceable				High		Low	
		High		Low					
	On line Dec. 1	Number	Per cent to total on line	Number	Per cent to total on line	Number	Date reported	Number	Date reported
1928	2,225,141	154,168	6.9	130,493	5.8	461,699	Jan. 1-7	85,825	Oct. 8-14
1929	2,219,652	145,411	6.5	122,552	5.5	447,141	Dec. 15-22	107,301	Oct. 8-14
1930	2,225,493	159,020	7.1	118,807	5.1	706,538	Dec. 23-31	373,825	Feb. 1-7
1931	2,172,990	197,289	9.1	143,289	6.5	750,697	Dec. 23-31	532,301	Oct. 15-22
1932	2,107,204	268,170	12.7	187,666	8.7	772,565	June 15-30	545,157	Oct. 15-31
1933	1,999,012	316,437	15.4	266,066	12.6	691,587	Jan. 1-14	376,818	Oct. 1-14
1934	1,892,181	301,368	15.4	286,928	14.4	435,819	Jan. 1-14	317,525	Sept. 15-30
1935*	1,819,033	290,709	15.5	273,125	15.0	376,575	Jan. 1-14	208,125	Oct. 15-31

* Up to November 1.

called intermediate steels, most of which are alloys that are expected to effect varying degrees of retardation of the corrosion type, as well as to increase the strength. These installations are generally regarded as experimental in character, the experiment covering the ultimate determination of the corrosion resistance of the steels under railway service conditions. For determining the economic value of the saved tare weight and of the increased net load-carrying capacity which the reduced tare weight makes possible, dependence must largely be placed upon some method of estimating the incidence of these factors on the various operating-expense accounts. It would manifestly be impossible by direct observation to determine the effects of small scattered installations of light-weight cars.

To some extent welding was also employed in freight-

These vehicles, no longer articulated, constitute a very sizeable multiple-unit locomotive which, in theory at least, could be utilized to haul any type of rolling stock in any service for which its capacity is adequate. In this is evident the beginning of a return to what has long been, and will long continue to be, the norm of passenger-train equipment in all but exceptional specialized cases.

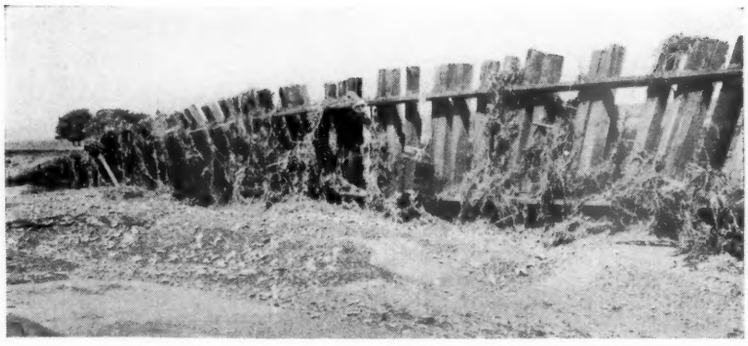
To meet one of these special conditions demanding a low-cost service of relatively high frequency, the so-called rail-bus, first ordered last year, has again been ordered this year. This type of vehicle, as thus far built, weighs less than 25 tons, has a correspondingly low first cost and has a total operating cost per passenger seat which the highway-bus operator finds painful to con-

(*Continued on page 34*)

Outlay for Maintenance of Way Largest Since 1931

Increase is modest compared with decline in expenditures from pre-depression levels

By Walter S. Lacher
Engineering Editor, Chicago



Flood Damage Retarded Program Work in 1935

Preparing Tracks for the Operation of High-Speed, Diesel-Powered Trains

THE expenditures of the Class I railroads for maintenance of way and structures during 1935 amounted to about $380,000,000, the largest outlay for this purpose since 1931. However, the increase over other depression years is small compared with the decreases that occurred between 1929 and 1932. Thus, although expenditures in 1935 were 18 per cent larger than in 1933, the low year, they were still only 45 per cent of the average annual outlay in the five years 1925-1929, the corresponding figure for 1933 being 38 per cent.

Perhaps a clearer picture of the situation with respect to maintenance of way is afforded by the fact that the annual outlay in each of the four years 1932-35, inclusive, fell within 7 per cent of the average figure of $355,000,000, while in the four years 1926-1929, inclusive, the expenditures varied only slightly more than 2 per cent from an average of $857,166,000. Thus, maintenance operations in these two periods, as shown in the chart, were on two distinct levels, connected by a period of rapidly declining operations represented by the years 1930 and 1931, in which the expenditures were $705,471,000 and $530,613,000, respectively. The ratio of the expenditure for labor to the total outlay for maintenance of way and structures has remained remarkably uniform throughout the depression years and has, in fact, deviated but little from the relationship that prevailed prior to 1930. Wages absorbed from 55.2 to 56.1 per cent of the total expenditure from 1930 to 1935, inclusive, compared with 54.2 per cent in the five years 1925-1929. While the percentage outlay for labor in 1935 was substantially the same as in 1934, the number of employees was somewhat less, namely, 205,893 for the first eight months of 1935, compared with 208,794 in 1934, the decrease in the number of men being offset by the increase in the average wages on account of the restoration of the wage cut.

How Much Deferred Maintenance?

How much deferred maintenance has accumulated as a result of the average deficiency of $502,000,000 in the expenditures of each of the last four years, and in smaller amounts in 1930 and 1931, compared with previous years? It is doubtful if that question will ever be answered to the satisfaction of any considerable group of railway maintenance officers, for there is too much opportunity for disagreement on the premises upon which an analysis of this problem must be based.

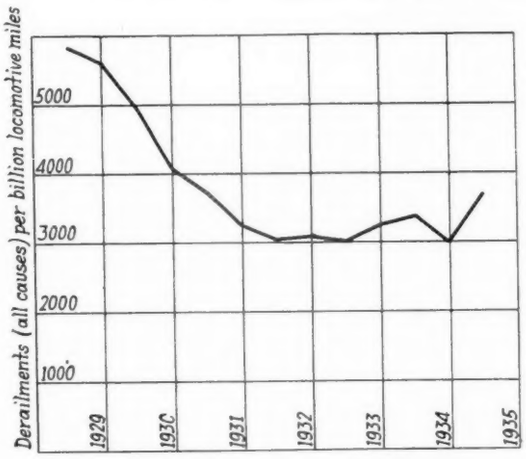
A qualitative measure of the deferred maintenance is offered by the chart in which the expenditures for maintenance of way and structures and the freight gross ton-miles from 1929 to 1935, inclusive, are plotted as percentages of the corresponding averages during the five years 1925-1929, inclusive. From this it is clear that the proportionate decline in expenditures has been much greater than in freight gross ton-miles. Gross ton-mile statistics are deficient as a measure of wear and tear to the extent that they ignore the effect of passenger train miles, which have declined relatively less than freight traffic. However, the wear and tear on many elements of the fixed properties continue unabated regardless of the decline in traffic, or are influenced only in part by the volume of traffic, so that the actual wear and tear have been relatively greater than indicated by the graph of ton-miles.

Many other factors enter into the problem, as for

example, the reduction in total maintenance of way expenditures due to the fact that a decline in the volume of improvement work results in a reduction in the operating charges incident to such work, the improvement in the efficiency of labor, the greater life of better materials installed in more recent years, and the influence of prac-

	Derailments all causes	Loco. miles Millions	Derailments per billion loco. miles
1929—1st half	4943	850	5820
2nd half	4928	880	5600
1930—1st half	3881	788	4930
2nd half	3086	755	4090
1931—1st half	2489	672	3710
2nd half	2065	637	3240
1932—1st half	1681	550	3060
2nd half	1640	530	3090
1933—1st half	1503	500	3010
2nd half	1788	550	3250
1934—1st half	1833	547	3350
2nd half	1647	552	2980
1935—1st half	2013	548	3670

tices and processes designed to extend the life of materials. Finally, there is the claim of certain maintenance of way officers that the work is now conducted in a much more prudent and efficient manner than in the years prior to 1930. Obviously, marked improvements in practice and organization have taken place, but to contend that the resulting economies are sufficient to



Derailments per Billion Locomotive Miles

offset the enormous disparity in the outlay for upkeep comprises an unwarranted indictment of the administration of maintenance of way during the prosperous years. A statistical study in which an effort was made to take all these factors into account indicates that the expenditures for maintenance of way and structures dur-

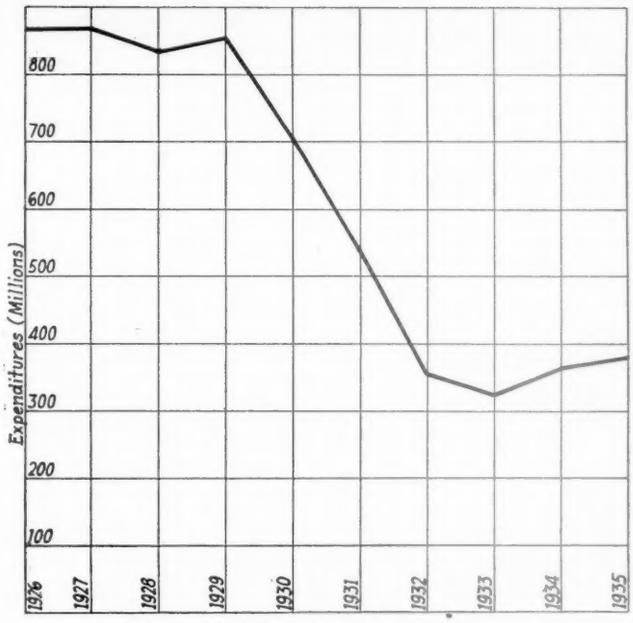
Rails Laid in Replacement

Year	New	Old	Total
1926	2,209,873	1,608,254	3,818,127
1927	2,124,765	1,694,350	3,819,115
1928	2,080,277	1,725,374	3,805,651
1929	1,958,489	1,651,966	3,610,455
1930	1,517,002	1,156,672	2,673,674
1931	984,900	730,005	1,714,905
1932	394,536	402,784	797,320
1933	403,254	459,044	862,298
1934	580,000 (Est.)		1,165,304

ing each of the last four years has amounted to not more than 60 to 70 per cent of the outlay that would have been required to maintain the condition of the properties.

What Derailment Record Shows

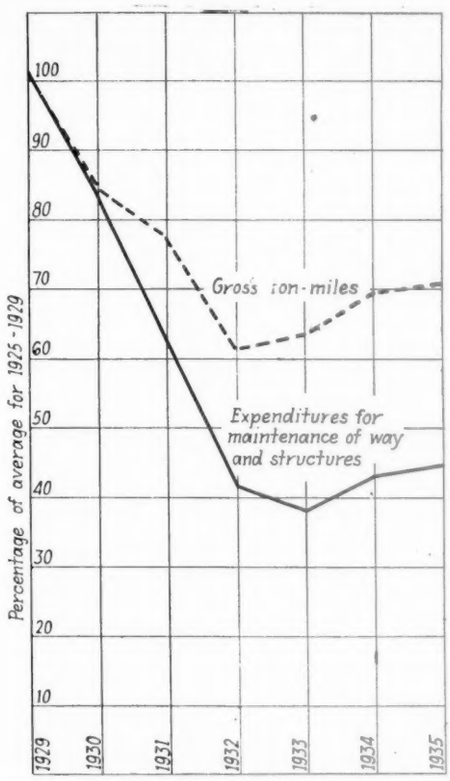
Any discussion of the extent to which maintenance expenditures may or may not be deficient is certain to



The Trend of Expenditures for Maintenance of Way and Structures, Class I Railways

raise the question of the accident record. In so far as maintenance of way and structures is concerned, the real test is the record of accidents resulting from inadequate maintenance of or defects in tracks and structures, and a study of this record over the period from 1925 to 1933, adjusted for variations in locomotive mileage (as a measure of the relative chances run) shows that the decline in accidents reached an apparent bottom about 1932, with an upward trend in 1933. Unfortunately, the tabulation for 1934 is not yet available.

However, some measure of the trend for the 18 months embracing 1934 and the first half of 1935 is afforded by



Decline in Maintenance of Way Expenditures Compared With the Decline in Traffic

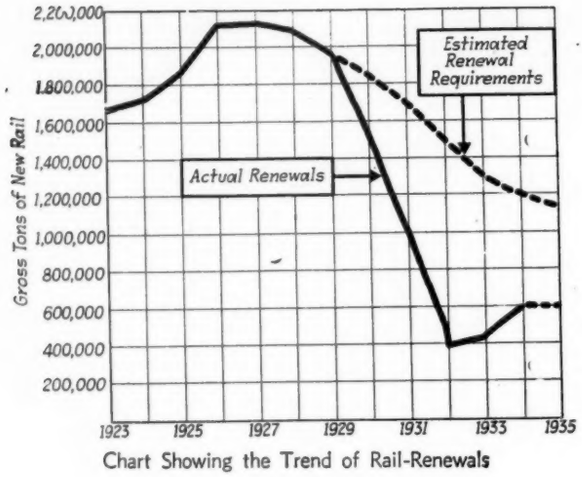


Chart Showing the Trend of Rail-Renewals

a similar comparison applied to derailments from all causes, although this necessarily includes derailments due to defects in or improper maintenance of equipment as well as those resulting from other causes. The graph of derailments per billion locomotive miles in six months periods, from January, 1929, to June 31, 1935, shows that the trend was definitely downward until the second half of 1932, and that the derailment record has been almost steadily less favorable since that time.

Rail and Tie Renewals

In 1934, the Class I railways applied about 600,000 tons of rail in replacements, and available information for 1935 indicates no marked departure from this figure in the rail renewals last year. There has been a tendency on the part of the roads during depression years to delay the application of rail for long periods after its delivery. This has been especially true during the last two years. Thus, in the nine months, from October 1, 1933, to July 1, 1934, the railroads placed orders for nearly 800,000 tons of rail, but less than 600,000 tons of new rails were laid in the calendar year 1934,

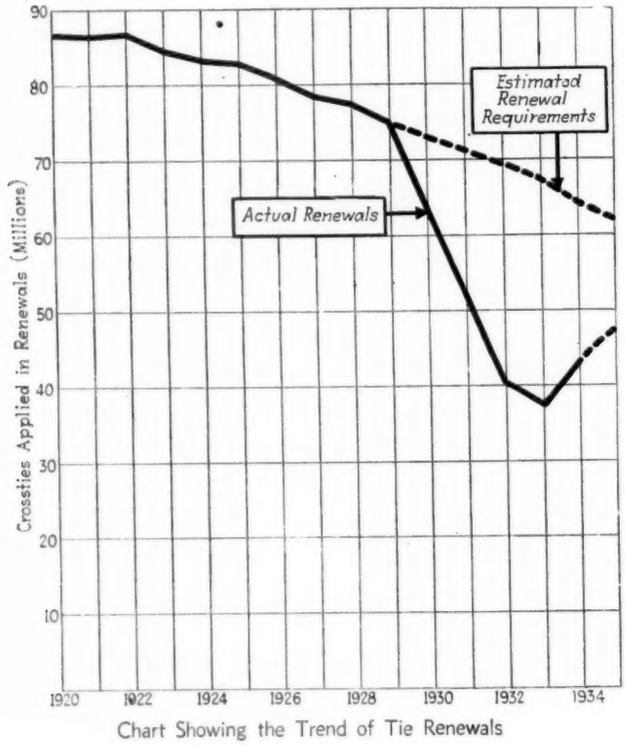


Chart Showing the Trend of Tie Renewals

the balance being carried over into 1935. Owing to the decline in earnings during the summer months of last year as well as dust storms and flood damage, all of which tended to retard program work, little progress was made in reducing the surplus of new rail on hand until early fall, when a rise in earnings gave a pronounced

Crossties Applied in Renewals

Date	All	Treated	Per Cent of Treated Ties
1920	86,829,307	.....	...
1921	86,521,556	.....	...
1922	86,641,834	.....	...
1923	84,434,985	.....	...
1924	83,073,059	.....	...
1925	82,716,674	.....	...
1926	80,745,509	55,557,706	68.8
1927	78,340,182	57,082,993	73.0
1928	77,370,491	59,157,540	75.5
1929	74,679,375	59,047,380	79.1
1930	63,353,828	49,720,080	78.5
1931	51,501,659	39,827,791	77.3
1932	39,190,213	29,435,055	75.2
1933	37,295,716	26,339,516	70.8
1934	43,306,205	31,309,342	72.4
1935	47,000,000 (Est.)	.....	...

impetus to maintenance operations, which were continued later in the autumn than usual.

The curtailment in crosstie renewals reached a maximum in 1933 when only 37,295,716 ties were inserted in existing tracks of Class I railways. That this number was far from adequate to compensate for the average rate of deterioration is indicated by the fact that the renewals in 1934 amounted to 43,306,205 ties, or an increase of about 16 per cent. The figures for 1935, when they are compiled, will show a still further increase. Tie condition has a greater bearing on safety of operation than the physical condition of almost any other part of the track structure, and it is certain that

Expenditures for Maintenance of Way and Structures, Class I Railways

(Thousands)

	Average, 1925-1929 (Inclusive)	1930	1931	1932	1933	1934
Superintendence	$57,262	$57,198	$49,324	$36,552	$31,921	$33,347
Roadway Maintenance	83,698	64,794	48,575	32,042	30,026	30,714
Tunnels	2,608	2,087	1,774	1,466	933	1,051
Bridges, Culverts, etc.	43,471	37,612	28,123	19,434	17,627	20,139
Ties	114,859	91,224	72,651	50,294	43,543	50,748
Rails	47,402	34,639	25,960	13,762	14,324	15,418
Other Track Materials	48,354	36,296	26,505	15,726	15,362	18,694
Ballast	19,379	13,262	8,601	4,969	5,814	7,538
Track Laying and Surfacing	211,067	172,136	131,274	83,407	77,025	85,641
Fences and Snow Sheds	5,831	4,494	3,119	2,135	2,047	2,412
Crossings and Signs	13,115	12,632	9,656	6,468	5,969	7,293
Buildings	79,000	63,836	42,539	24,924	24,576	31,448
Water Supply	10,444	8,944	6,299	3,952	3,749	4,441
Tools and Equipment	18,230	16,534	11,834	7,917	8,051	10,666
Injuries	5,907	5,424	3,941	2,811	2,417	2,810
Miscellaneous	88,396	73,145	60,438	45,320	38,902	42,940
Total	$849,021	$705,471	$530,613	$351,179	$322,286	$365,300

renewals must be made in materially greater volume in future years to avoid a decline in the standard of track maintenance.

Little Change in Allotment of Funds

The table showing the distribution of the expenditures for maintenance of way among 16 selected accounts is of particular interest because it brings out the fact

that the amounts allotted to particular accounts have not varied widely since 1932, the only definite trends indicated being slight increases in the allotments to Rails, Other Track Materials, Buildings, and Tools and Equipment. It is interesting to note also the change in the relationship of the amounts allotted to the various accounts during the depression years compared with the average of the allotments from 1925 to 1929, inclusive. The most pronounced change has occurred in the allotment to Supervision, which in spite of the consolidation of positions, absorbed 9.8 per cent of the total in 1932-3-4, compared with 6.8 per cent during the five-year pre-depression period.

Increases have occurred also in ties (from 13.5 per cent to 13.9 per cent), in Bridges (5.1 to 5.5 per cent), Highway Crossings and Signs (1.5 to 1.9 per cent) and Tools and Equipment (2.1 to 2.6 per cent). The greatest decrease has taken place in Rail, which consumed 4.2 per cent of the total in 1932-3-4 instead of 5.6 per cent, while other reductions are as follows: Roadway, 9.9 to 9.0 per cent; Other Track Material, 5.7 to 4.8 per cent; Ballast, 2.3 to 1.8 per cent; Track Laying and Surfacing, 24.9 to 23.7 per cent; and Buildings, 9.3 to 7.8 per cent.

The Influence of Higher Speeds

While it has been contended that reductions in expenditures for the maintenance of tracks are justified by reason of the decline in the volume of traffic, there has been no corresponding reduction in train speeds. As a matter of fact, the trend has been definitely in the opposite direction. This applies to trains of all classes, but the outstanding development of the last year and a half has been the improvement of the tracks on particular lines in preparation for the operation of trains scheduled at much higher speeds than those previously in service. This consists primarily in such work as is necessary to insure a greater refinement in line and surface on both tangent track and curves, together with the adjustment of superelevation on curves and the lengthening of spirals, and varying amounts of relocation to effect reductions in curvature. Thus far this work has been confined to a limited mileage of lines, but it is being extended to additional lines as further high-speed runs are authorized. Thus, instead of a track structure of the type established as of a high standard in 1929, the railroads are being compelled to set up new standards for refinement in quality and to insure this at a reasonable outlay for upkeep will call for greater strength and stiffness.

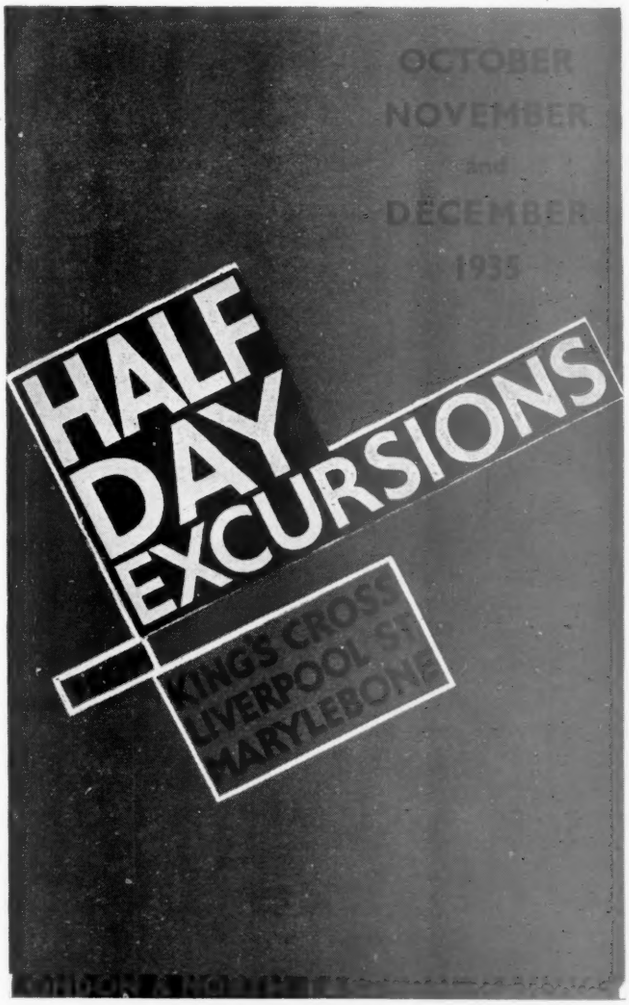
Better Rails

The outstanding technical development of the year was the publication of the first report on the Joint Rail Investigation, which has had for its purpose the discovery of the cause of the internal fissure. Concurrent with this the steel mills announced their readiness to furnish rail subjected to controlled cooling or other processes designed to decrease the predisposition to internal flaws, and a number of the railroads have bought rails that have been so treated, including some that have been end-hardened as well. Another noteworthy development of the year was the announcement of the findings of the Chicago, North Shore & Milwaukee on the effect of changes in the contours of the wheel treads on the riding qualities of the cars at high speeds, since it directed attention to contingent causes of rough riding which might, in some cases, be unjustly charged to defects in the track.

In the field of mechanical appliances, particular mention may well be made of the developments in tamping equipment, because of the introduction during the last year of three new types of mechanical tampers and the improvements made by the manufacturers of well established pneumatic and electric tampers in tamping bars and blades that are said to possess greater efficiency and wider adaptability. Coincident with improvements in rail-joint bars and in methods for reducing the wear of rails at the joints, marked interest is being shown in the experience of several railways with track in which long stretches of rails have been butt-welded, which has greatly stimulated discussion of the rail joint and the solution of the many problems it presents.

The maintenance of way departments of American railways are rapidly becoming laboratories in which materials, appliances, methods and forms of organization are being subjected more and more to investigation. The section gang, in particular, has been placed under critical scrutiny, because the decrease in the size of gangs has resulted in an increase in the relative outlay for supervision, to which attention has been directed heretofore. Many roads have, therefore, introduced modifications in organization that have greatly reduced the number of these working units. The most recent development in this field is the recently announced substitution of motorized floating gangs for all section gangs on the New York, New Haven & Hartford. This is indicative of many further modifications in organization that will be made in the near future.

* * *



A Booklet of Special Bargains Published by the London & North Eastern of Great Britain

The Twenty-second Street Viaduct over the L. & N. Station Tracks at Birmingham, Ala.

Dirt Flies on Grade Crossing Project

Public responsibility definitely established by the use of $200,000,000 of federal money for separation and protection work

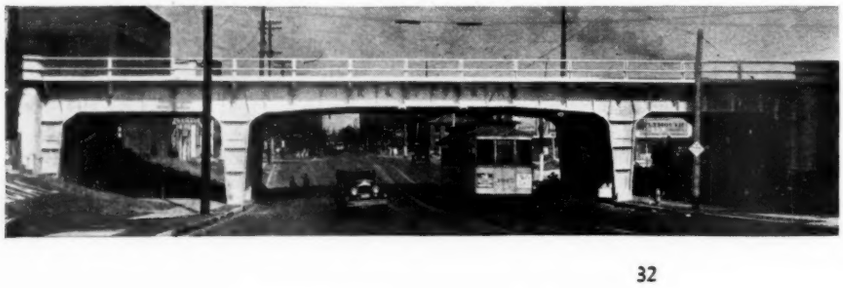
By Walter S. Lacher
Engineering Editor

THE $200,000,000 approved grade crossing elimination and protection program provided for under the $4,880,000,000 Work Progress appropriation of the last Congress is rapidly entering the construction stage. Up to December 23, plans, specifications and estimates covering 595 projects had been approved, and of the 311 of these that had been placed under contract 177 were actually under construction. These 595 approved projects are estimated to cost about $51,127,000, or about 25 per cent of the total allotment. However, the states have already submitted programs totaling around $162,000,000, and of these the President has approved programs covering some $139,000,000 worth of work. In the meantime, individual projects are being approved at the rate of several million dollars per week and the awarding of contracts is proceeding at about the same rate, but with approximately a three weeks lag. An effort is being made to put the work under contract as rapidly as plans can be developed consistent with good engineering practice.

Thus, the administrative staff of the Bureau of Public Roads, which is required to place its stamp of approval on every project proposed, is expediting the work at a rate that promises to make up some of the time lost by reason of delays in formulating the rules of procedure and the tardy abrogation of certain rules governing the employment of labor that threatened at one time to cripple the entire program for grade crossing elimination and protection that had been built up during the last two years as a result of close co-operation between the federal and state highway authorities and the railways. This situation, however, was cleared up in time, with the result that people of the United States will be enabled to reap the benefits of the most meritorious provision of the work relief legislation.

A Popular Feature

As has been set forth in previous issues of the *Railway Age,* there has been a marked change in sentiment concerning the responsibility of the public regarding accidents at crossings of railroads and streets or highways. That there has been a growing appreciation of the part that the federal government ought to and should take in reducing the toll of accidents is shown clearly by the legislation of the last three years. Thus, Title II of the National Recovery Act of 1933 authorized the states to apply to grade separation and protection any amount of their allotments from the $400,000,000 highway appropriation provided for in that law, on the ground that the money would be spent for "reducing hazards on the highway." The same policy was adhered to in the Hayden-Cartwright act, authorizing the expenditure of an additional $200,000,000 on public roads, except that the optional provisions concerning grade separation were made somewhat broader. However, in spite of the purely optional nature of the provisions for the use of federal funds for grade separation under these two laws, more than $30,000,000 was so spent, and Thomas H. MacDonald, chief of the Bureau of Public Roads, United States Department of Agriculture, reports that 412 grade separation projects were completed under the terms of these two acts dur-



Fixed-Frame Steel Structure that Carries the Kentucky and Indiana Terminal Tracks over Broadway in Louisville, Kentucky

ing the fiscal year ended June 30, 1935; 196 others were under construction and 24 more had been approved.

Evidence of the widespread approbation of the use of federal funds for improved safety at crossings encouraged the proponents of this policy to urge the earmarking of a definite sum for this purpose from the gigantic fund that it was proposed early in 1935 to appropriate for a campaign to eliminate unemployment. As a result, $200,000,000 was set aside for exclusive use in separating grades, the reconstruction of grade separations, the relocation of highways to eliminate crossings, and grade crossing protection. The basis for the distribution of this fund among the 48 states, the District of Columbia and the Hawaiian islands was established in the law as one-half on population, one-fourth on the mileage of the federal aid highway system and one-fourth on the railroad mileage, and the allotments, as shown in the table in another column, were set up early in May.

The railroads and many of the state highway commissions had previously developed tentative selections of the grade crossings to be recommended for elimination or protection. The ground work for this co-operative action had been laid by a committee of railway engineers (of which R. H. Ford, assistant chief engineer, Chicago, Rock Island & Pacific, was chairman), that had taken on this work in addition to other duties previously assigned. Late in April, the board of directors of the Association of American Railroads appointed a special committee to represent the carriers in connection with the allocation of the grade crossing funds, the members of this committee being R. E. Dougherty, vice-president, New York Central Lines (chairman); T. J. Skillman, chief engineer, Pennsylvania; W. D. Faucette, chief engineer, Seaboard Air Line; G. W. Harris, chief engineer, Atchison, Topeka & Santa Fe; and C. F. Loweth, consulting engineer, Chicago, Milwaukee, St. Paul & Pacific, who was succeeded following his death by R. J. Middleton, assistant chief engineer of the same road. Mr. Ford is an ex-officio member of the committee in his capacity as chairman of the Engineering division of the A.A.R.

As was to be expected, minor differences of opinion and points of view were developed at conferences of railway, state, and federal engineers. Some public officers manifested an urge to impose their ideas abitrarily on the railroads, while a few railway officers appeared reluctant to accept any suggestions calling for deviations from their practices in the interest of a greater degree of standardization. On the whole, however, these conferences evinced a common desire to further the programs of grade crossing elimination, and a spirit of mutual co-operation has prevailed.

Unworkable Rules

Thus, it appeared that all circumstances favored an almost immediate initiation of the work, but, unfortunately, this sanguine outlook proved unwarranted. The first apprehensions were aroused by what appeared to be an uncalled for delay in issuing the rules under which the individual projects were to be submitted for approval, authorized and carried out, but this was as nothing to the consternation that followed the appearance of the rules on July 12, more than three months after the work relief bill had been passed. It became evident that the delay in the preparation of the rules had been due in part to efforts to reduce to workable rules for the construction of grade separation structures, etc., stipulations concerning the proportion of the funds to be expended for direct labor.

Distribution of the $200,000,000 Grade Crossing Allotment Between States

Alabama	$4,034,617	New Jersey	$3,983,826
Arizona	1,256,099	New Mexico	1,725,286
Arkansas	3,574,060	New York	13,577,189
California	7,486,362	North Carolina	4,823,958
Colorado	2,631,567	North Dakota	3,207,473
Connecticut	1,712,684	Ohio	8,439,897
Delaware	418,239	Oklahoma	5,004,711
Florida	2,827,883	Oregon	2,334,204
Georgia	4,895,949	Pennsylvania	11,483,613
Idaho	1,674,479	Rhode Island	699,691
Illinois	10,307,184	South Carolina	3,059,956
Indiana	5,111,096	South Dakota	3,249,086
Iowa	5,600,679	Tennessee	3,903,979
Kansas	5,246,258	Texas	10,855,982
Kentucky	3,672,387	Utah	1,230,763
Louisiana	3,213,467	Vermont	729,857
Maine	1,426,861	Virginia	3,774,287
Maryland	2,061,751	Washington	3,095,041
Massachusetts	4,210,833	West Virginia	2,677,937
Michigan	6,765,197	Wisconsin	5,022,683
Minnesota	5,395,441	Wyoming	1,360,841
Mississippi	3,241,475	Dist. of Col.	410,804
Missouri	6,142,153	Hawaii	453,703
Montana	2,722,327	Eng. & Adm. Res.	4,000,000
Nebraska	3,556,411		
Nevada	887,260	Total	$200,000,000
New Hampshire	822,484		

One of the Many Grade Separations That Accommodate Broad Highways in Wayne County, Mich.

Rules Rescinded

In brief, these rules were designed to "make work" for persons on relief, regardless of their qualifications or skill, or the effect on the cost of the work. However, the rule that almost wiped out any chance for using the money for grade separation, required (1) the equivalent of a man-year of employment on the project at a total cost to the federal government, including labor, materials and all other items properly chargeable to the work, of not exceeding $1,400 per man-year, or (2) that 40 per cent of the total cost of the project, including the cost of private property necessary to acquire in undertaking the project, go to persons directly employed on the project. The Bureau of Public Roads had introduced an alternate plan, which in substance permitted the states to apply against grade crossing projects in fulfillment of the above rule, the time of men employed by the state on other forms of relief work at state expense and in conformity with certain regulations imposed by the federal government.

While Michigan, the first state to submit its program, and one or two others saw fit to avail themselves of

the provisions of this alternate plan, the others were unwilling or unable to do so, and the grade crossing work remained almost at a standstill until August 29 (nearly five months after the money was made available by congress), when it was announced that the objectionable rules concerning labor had been either revoked or so altered as to remove the stipulations that had been so effective in obstructing progress in the program. Since that time, as stated previously, the projects have been advanced in orderly and expeditious routine.

The programs acted upon to date represent about 70 per cent of the work to be done, and the number of projects already approved is so large as to form the basis for rather reliable conclusions concerning characteristics of the work being authorized. Of a group of 648 projects that have been approved, 479 provide for grade separations, 80 are for the reconstruction or improvement of existing separations, 57 provide for the relocation of highways for the purpose of eliminating crossings, and 32 projects cover the installation of signals, gates or other protective devices.

Other things being equal, the grades at railway-highway crossings have been separated first at locations where the physical conditions favored separation and the projects could be completed for the least money. Therefore, as the "easier" jobs have been completed, those next on the list prove more expensive. This fact accounts for the wide disparity in the figures given by different individuals as representing the avereage cost of separation projects.

Average Cost Higher

When the tabulation of the projects carried out under the Public Works highway program as of January 31, 1935, showed that the average cost of 551 projects was $46,000, it was predicted that the average outlay per project under the work progress program would be appreciably higher because the new program would include a greater number of the "harder jobs," and various estimates ranging from $75,000 to $100,000 were suggested. The forecast of the Bureau of Public Roads was $93,000. However, the estimated cost of the 479 projects cited above averages $108,000.

This higher average can be explained by the fact that the approved list includes a number of large projects which, while not important numerically, will cost so much more than the usual separation as to affect the average cost appreciably. Included among these larger jobs is one of $1,740,000 (Louisville & Nashville track elevation at Louisville, Ky.), two in excess of $870,000, and 25 others of $300,000 or more, or 28 projects totaling $13,061,000. If we deduct these we find that the average estimated cost of the 457 more typical separations is about $86,000.

While, therefore, large projects, mainly urban, have become a factor in the work, it is significant that the projects in most states are rather thoroughly dispersed. For example, 74 Illinois projects are distributed among 32 counties, 71 in Minnesota are located in 34 counties, and the same number in Texas are scattered over 59 counties.

Rebuilding Projects

It is worthy of note that of an expenditure of $59,084,000 for 648 projects, $4,186,000 will go for the reconstruction of 80 existing separations. In most cases, the occasion for these rebuilding projects is the inadequacy of the existing structure as to grade, width or curvature for present day highway traffic. The average cost of these 80 projects is $52,500. Obviously, the greater number of these projects are in the older states or in the more densely populated districts where there has been a demand for grade separation for many years.

Relocation plays a less important part in the program than was anticipated, as only 57 out of 648 projects are of this nature. It is significant, however, that the average cost, $49,800, is as much as that of many a separation.

Equipment Reserves Continued to Decline

(*Continued from page 27*)

template. Some of these vehicles are being equipped with air conditioning. They are not designed to be operated in trains with other cars.

Status of Existing Equipment

The marked decline in the number of units of all types of rolling stock owned by the railways which has prevailed throughout the years of the depression has continued during 1935. This decline has been the result of heavy annual retirements and light installations. The number of locomotives has decreased at an average rate of 1,877 per year for the past six years, railroad-owned freight cars at the rate of 83,310 and railroad-owned passenger-train cars at the rate of 1,749. A sharp decline in retirements in 1935, however, has checked the rate of decrease in the locomotive and freight-car inventories. The decline in the number of passenger-train cars goes on unchecked.

In the case of locomotives the shrinkage in the number of units must be corrected for changes in tractive capacity before its true effect may be evaluated. Since 1929 the aggregate tractive capacity of the motive power of the Class I railroads has declined 13 per cent. This compares with a decline of 19.4 per cent in the number of locomotive units. Somewhat the same relationship exists between the decline in the number of freight cars and in the aggregate freight-car tonnage capacity. The growing average capacity of freight cars, however, is far less a measure of actual transportation capacity than is the number of units, because so much of the car loading is below car tonnage capacity.

The steady decrease in the number of locomotives owned and accumulation of unserviceable locomotives have combined to cause a decline in the number of locomotives in active service which has continued during 1934 and 1935, notwithstanding the fact that locomotive mileage increased sharply in 1934 and slightly further in 1935. The result has been a utilization of higher intensity than that of 1928 and 1929. In fact, the average for last year approaches the intensity of the peak months of the two earlier years. And whatever value may be attached to the so-called "stored serviceable" locomotives, the largest number reported during the first 10 months of 1935 is less than the smallest number reported in 1928.

A somewhat parallel situation exists with respect to freight cars. The total railroad ownership has declined from 2,264,000 in December, 1929, to 1,851,000 in the fall of 1935, a reduction of 18.3 per cent, and the surpluses, which began to decline in 1933, grew smaller last year. The maximums of 461,700 and 447,100 and minimums of 85,800 and 107,300, respectively, in 1928 and 1929, compare with a maximum of 376,600 and a minimum of 208,100 during the first 10 months of 1935.

The Canadian National's New Hotel at Saskatoon, Sask., "The Bessborough"

Transportation Legislation Looms in Canada

Liberals expected to regulate trucks, re-establish parliamentary authority over C. N. R.—Revenues increasing

By Railway Age's Ottawa Correspondent

AT a conference between the Dominion and provincial governments held in Ottawa in November there was candid talk about the state of the federal treasury and about the continual drains upon it by the Western provinces to meet their unemployment relief requirements and by the Canadian National to meet interest charges, and in some lean years to make up the deficit on operations. Cabinet ministers declared repeatedly that all this could not continue if the Dominion were to preserve its solvency. Such talk has been heard at previous conferences but the difference between the emphatic assertions made then and now is that the members of the new Dominion government appear to mean every word and every punctuation mark. They are out for action and with eight out of the nine provinces of the same political complexion as that of the ministry of Premier King they feel confident that effective action can be secured.

Express Service Merger

All this has a direct bearing on the railway situation. Three or four years ago the then Bennett government formed a commission to probe the railway situation and find a way out. The commission would not go so far as to urge amalgamation of the two principal railways but it did recommend machinery for compelling co-operative economies if the two roads failed to effect them voluntarily. One move to make effective the commission's recommendations was to substitute for the existing board of directors of the Canadian National a board of trustees and so frame that legislation as to make the new set-up as free as possible from political interference. The Bennett government professed to take steps to enforce joint economies and went so far as to introduce a bill in the House of Commons to amalgamate the express services of the two roads, but for some reason this measure was withdrawn a little later.

No Enforced Pooling So Far

A few voluntary joint economies were made by the railways such as the pooling of passenger train service at several places, and schemes for further savings were provided for in a report by the engineers of the two railways. That report, however, was never acted upon during the Bennett regime, for in the last two years there was no chairman of the Dominion Railway Board, which corresponds to the Interstate Commerce Commission. The law provided that the chairman of this Board should also be the umpire in any joint economy scheme on which the two roads could not agree. Failing the appointment of a Board head, the machinery for enforcing co-operative savings was inoperative. Now, however, there is such a chairman in the person of

Hon. Hugh Guthrie, former Minister of Justice, who was named by Mr. Bennett just previous to the recent general election which removed him from the premiership.

Trustee Arrangement to Go

Recent utterances by the new Minister of Railways, Hon. C. D. Howe, have made it apparent that the set-up left by the Bennett government is not satisfactory to him. The King cabinet does not like the board of trustees machinery of operating the Canadian National. They feel that Mr. Bennett leaned over backwards in trying to safeguard the publicly-owned road from political interference for, in effect, his legislation as it stands makes it impossible to make any change in the personnel of the management of the road. They assert that so long as Parliament has to find the money to keep the Canadian National operating it should have a direct and immediate control over the road. For that reason important changes are foreseen in the present legislation at the coming session of Parliament, changes designed to restore to the government and Parliament the immediacy of control which the present cabinet believes it should have.

Before the new government came into office the cabinet post of Minister of Railways and Canals was separate and distinct from other positions, but Premier King believed more co-ordination was needed in the transportation services, and the new Minister, Mr. Howe, is also Minister of Marine, the two to be combined under the one title of Minister of Transport when legislation is passed in the coming session. The merging of the titles as well as the portfolios is significant. It means that a policy of getting a closer relationship between all the transportation services will be sought by the new government.

Mr. Howe has made it plain that this co-ordination will not be attempted in any spectacular way by some big legislative scheme but by a careful process from the bottom up. To begin with, the measure to merge the express services of the two railways will be reintroduced, and similar efforts will be made to amalgamate the telegraph services and to eliminate the duplication of traffic agencies at many points. Already a number of branch line services have been abandoned by the railways with the consent of the Dominion Railway Board, but it is believed that most of the economy in this direction has been effected and little more progress can be made here. A move to enable a closer linking of air service with the railways, especially in Western Canada, will be made.

Truck Regulation Foreseen

On the vexed question of highway competition important recommendations were made at the recent Dominion-provincial conference in Ottawa. Actual control and regulation of the highways lie with the provinces, but at that conference provincial government showed representatives their desire to co-operate with the Dominion to remove some of the inequities with which the steam roads are confronted. The Dominion cannot oblige the provinces to action but the federal authorities have been assured that the provincial governments will go a long distance toward making the trucks and buses pay a larger share of the costs of highways, in placing the steam roads on a fairer basis in the matter of freight tariffs and in making the operating conditions on the highways more comparable to those of the steam roads. A federal bureau to promote co-operative effort on the part of the provinces has been established by Mr. Howe, who is confident that valuable results will come.

Some eminent railway economists are convinced that the only real solution of Canada's baffling railway problem lies in the amalgamation of the two roads under private control; others including one member of the King Cabinet feel that such amalgamation should be under public control; while another just as eminent school are persuaded that amalgamation would be not only politically but financially and physically impossible. In the last analysis the great obstacle to amalgamation is political.

Both major parties are on record opposed to amalgamation. Mr. Bennett committed himself two or three years ago with his slogan: "Amalgamation never; competition ever." In the recent campaign Mr. Mackenzie King reiterated the determination of the Liberal party to preserve the integrity and separate entity of the Canadian National. There is no doubt these declarations of policy were made because both parties feared the people would not tolerate any other position, but there is believed to be a growing feeling among those who have to pay the tax bills that almost anything would be better than the present drain on the public purse by the Canadian National. They may be told that amalgamation would not wipe out the annual interest bill averaging $50,000,000 on Canadian National debt and they may be told that compulsory joint economies will provide all the advantages of amalgamation with none of its financial and legal tangles.

Early Amalgamation Unlikely

This debate, in which President Sir Edward Beatty, of the Canadian Pacific, has taken a leading part as the champion of amalgamation under private ownership, is likely to continue for some time. As carloadings begin to increase public anxiety over the fate of the publicly-owned road may be expected to diminish. It is difficult therefore to expect any early action more definitive than the prosecution of means to enforce further joint economies, promote co-operation between the provinces to secure more uniform and equitable regulation of highway traffic and the removal of needless handicaps imposed on the steam roads. In the meantime the discussion of a final solution will continue with the hope that eventually public opinion will be educated to the point where a thoroughgoing solution may be possible.

Canadian Railways Face Serious Problems

By Sir Edward Beatty, G.B.E.*

For the eleven months to November 30 the Canadian Pacific's gross earnings totaled $119,098,000 as against $114,837,000 in 1934. This gives the present year an increase of $3,261,000, or 2.8 per cent, which comparatively low figure leaves much to be desired in the light of the company's requirements. Following upon conditions beyond our control operating expenses were also higher. Perhaps these figures will be better understood when I state that as compared with the gross earnings for the year 1925, those estimated for the present year show a decrease of approximately $65,000,000 or over one-third. No good purpose would be served by a labored study of the causes that have brought about this drastic change. Summed up, it boils down to the fact that the business has not been available. We have had to meet this condition by measures of economy and increased efficiency, and they have continued in force throughout the past year as far as was compatible with

* Chairman and President, Canadian Pacific. (An abstract of an annual review statement.)

the proper maintenance and safeguarding of the property.

But changing conditions in business and new methods of competition in transportation face the railways with the need of progressive modernization of their facilities, all of which is a matter of large expenditure. Therefore, if this country is to continue to enjoy its present happy position of being efficiently served by its railways at a comparatively low cost, something more far-reaching must be done to place them upon a sound and profitable basis. Certainly we are not appreciably further out of our troubles than we were a year ago.

Business Improving

Economic progress in this country gives every evidence of continuing to be a matter of slow but appreciable movement towards stabilizing conditions and increased volume of business recorded in the face of conditions heavily fraught with discouraging factors and seemingly bereft of anything in the nature of large-scale or comprehensive effort towards solution of the most grievous of our economic problems. It is quite evident that the past year has seen progress. An increased total of Canadian business is recorded in current statistics, more people are employed than were a year ago, and throughout the country there exists and for some months has made itself felt a more general feeling of contentment with things as they are and as they promise later to be. Some of this improved feeling is undoubtedly due to betterment of conditions in large agricultural areas where moisture succeeded prolonged drought, ensuring food for stock and general crops that were mostly fair to good. On the top of this an upward turn in grain prices followed by higher quotations in live stock and other farm products contributed towards relief of an extended period of pronounced general agricultural depression. Upon such a basis as this improved business conditions were more or less bound to make themselves felt.

In only a few widely scattered and perhaps highly specialized phases of Canadian industry has there been anything in the nature of a spectacular upward move in profitable activity. The sum total of progress, nevertheless, has been most encouraging and has served to re-assure us that under normal and favorable conditions this country can maintain a level of prosperity which in the past has normally given all classes of our people a reasonably high standard of living.

Canadian and U. S. Recovery Contrasted

When times are less than good and unemployment widespread there is perhaps small comfort in the reflection that we are better off than are most other countries. That thought, however, is important in that it provides a yard-stick for the appraisement of our own present situation, and a just basis for estimate of our future. With the exception of Great Britain, no one of the larger countries presents evidence of having advanced so far along the road to re-stabilization of industry or to normal commercial activity on what appears to be a permanent basis. In the United States there have been marked advances in several phases of industry, but there also have been marked reactions which would indicate that nation-wide measures taken to alleviate trade stagnation were lacking in fundamental soundness and despite their huge cost would prove to be temporary expedients only postponing a rectification of economic difficulties along the line of common sense economic practice. Canada's surer and uninterrupted, if slower, progress is doubtless in part attributable to the fact that we have not attempted to employ economic panaceas to mitigate our troubles.

If we would summarize the state of Canadian trade in general at this end of the year 1935 and compare it with that which obtained a year ago, I know of no more surely indicative set of figures than is provided by the year's freight car-loadings. They are now available up to the end of November and form very interesting reading. For all Canada the number of cars loaded was greater than in 1934 by 28,828, not a large figure, and it is notable that Western Canada had an increase of 32,007 for the year while in the east there was a decrease of 3,179, which may be taken as reflecting the betterment in agricultural conditions. These car-loadings include the movement of general commodities and reflect increased business following upon higher prices for farm products. Were they confined to a record of the movement of grain, grain products and live stock the story would be different. For all Canada the movement of these commodities showed a decline of 12,685 cars. Western loadings of grain and products showed a decline of 6,626 cars, and eastern of 5,642. Western live stock loadings increased by 2,918 while eastern were less by 3,335. In these figures will be found much of the reason for the smallness of the increase in railway earnings Canada this year has to record.

Mining Development

Other classifications are hardly less interesting. An increase for all Canada of 5,437 cars of ore reflects only partly the uninterrupted and important development of mining which we have enjoyed. This industry by the providing of employment and the consumption of supplies has been a tremendous factor in assisting to carry the country over the depression period. The total volume of railway business attributable to it forms a steadily growing percentage of the total. Of lumber we find a decrease for all Canada of 1,136 cars. For pulp wood and for pulp and paper we have an increase of almost 11,000 cars. One would like to be able to say that this meant progress in an industry which a few years ago was looked upon as rich in potentialities for national profit. Under conditions which have been brought to pass, however, and owing to world prices now obtaining, it represents more than anything else the denuding of Canadian forest areas at small profit, while other nations conserve their forest wealth for better times and more favorable markets.

It is in loadings of miscellaneous merchandise that Eastern Canada best shows the industrial progress that has been made over the year. An increase of 17,890 cars reflects the general industrial progress and this is strengthened by an increase for the same classification of 7,278 in the west, making a total for all Canada of 25,168, a very large percentage of the increase in all phases of the year's activity.

I look upon the broadening of international trade by arrangement with foreign countries as one of the most hopeful avenues which may lead to the desired result, this being true provided, of course, that our own industrial interests are safeguarded insofar as they affect Canadian industry as a whole.

Burdensome Taxation

There are matters, however, upon which we have experimented for many years, and although we have had bitter experience enough we seem to have learned little. I refer more particularly to the trade deadening effect of national overindebtedness and its accompanying paralyser of business, heavy taxation. It is years since those Canadians who take an intelligent interest in the economic welfare of their country first began to protest the steadily mounting indebtedness, federal, provincial and municipal, and throughout all these years the sum

total has been increasing until it has now assumed proportions of burdensomeness that compel immediate attention. There are other contributory matters that call for attention at this time and I suggest that one of them is the matter of immigration. Our more prosperous times have been those in which we have received larger numbers of new settlers with their wealth. If we cannot in a short time reduce our load of debt we can at least do something to stop its increase and we can bring into this country more people whose efforts will create wealth with which to help meet it and so lessen the load upon the individual.

I have not striven to present the more optimistic side of the outlook for our country's future. At this moment there is every reason to suppose that the coming year will show a greater measure of improvement over this than we have to record over 1934. That improvement will be all the more marked and it will be all the more soundly established for years to come if at its end we have taken our courage in our hands and set about the permanent solution of some of the problems I have here touched upon.

Canadian National's Earnings Improve

By S. J. Hungerford*

The year 1935 has witnessed a further improvement in Canadian business conditions which has been reflected in additional revenues on the Canadian National. For the second year in succession, revenues of the all-inclusive system will show an increase, 1935 gross revenues being approximately $8,100,000 greater than those for 1934. Operating expenses will be approximately $6,800,000 greater than last year, so that the improvement in net revenues will be about $1,300,000.

The revenues and expenses for 1935 and 1934 are as follows:

	Revenues	Expenses	Net Operating Revenues
1935 (Estimated)	$173,000,000	$158,700,000	$14,300,000
1934 (Actual)	164,900,000	151,900,000	13,000,000
Increase	$8,100,000	$6,800,000	$1,300,000

As a result of negotiations between the Canadian railways and organized railway labor, a portion of the deductions from basic rates of pay was returned to the employees during the year. For the greater part of the year 1935 wages of Canadian employees were generally on a basis 10 per cent below those in effect in 1929 as compared with wage conditions in 1934 which were 15 per cent below the 1929 level. The effect of this was an increase in the operating expenses of the Canadian National of more than $4,000,000. In spite of this additional payroll expense, the net revenues have shown an improvement over the previous year.

Budgetary control of expenses has continued to play a major part in the improvement of the net position. Some measure of the improved operating performance of the Canadian National may be obtained from a comparison for the past two years and for 1928, the all-time traffic peak, of a few of the more important indices generally recognized by North American railroads as indicative of freight operating efficiency.

	Freight Train Performance		
	1935	1934	1928
	10 Months		
Gross tons per train	1,544	1,538	1,507
Gross ton-miles per train-hour	24,800	23,900	19,400
Pounds of coal per 1000 gross ton-miles	116	119	123

* President, Canadian National.

These figures reveal a steady improvement in operating efficiency which has played a considerable part in reducing the railway's financial requirements. The contributory pension plan made effective on January 1, 1935, has been very favorably received by the employees; the contributors to the plan now number more than 18,000.

Competitive Problems

Throughout the year, the railways have continued to study different methods of coping with competition from other forms of transport. As a measure of meeting that from commercial highway motor vehicles, freight train schedules have been greatly improved, so that overnight delivery of freight between the larger centers up to and in some cases exceeding 300 miles is now available for shippers. In experimental territories, rail charges have been revised so that they include the cost of collection and delivery of shipments. Through the extension of their radius of pick-up and delivery services, it may be said that the railways themselves are to a limited extent engaged in highway trucking, but a greater participation by the railways in this form of transport is precluded under the present unstable conditions surrounding commercial highway operations. The railways deplore the continued waste of transport due to uneconomic truck operations and the interest of the governments, both Dominion and provincial, in this question is evidenced by the consideration given to this subject at the recent interprovincial conference. The railways will continue their studies and experiments to bring about a co-ordinated scheme of transport best suited to the requirements of the country, but the general public cannot hope that the railways alone can solve this competitive problem.

Capital Expenditures Limited

Expenditures on capital account have been almost entirely limited to those essential to safety of operation. As a result of the improvement during 1935, for the fourth successive year, the new money requirements of the System will be reduced. Canada is unquestionably making considerable progress on the road to recovery. There are many factors favorable to a business revival. The trend toward the recovery of international trade and the improving general outlook can be regarded with optimism, presaging the return of prosperous conditions in which the Canadian National will participate.

* * *

C. M. St. P. & P. Freight Train Arriving at Three Forks, Mont., Hauled by a 3-Unit Electric Locomotive

Mexican Railways Show Continued Improvement in Traffic

Revenues maintain upward trend started in 1933 — Net shows slight decline

A Deck Truss Bridge on the National Railways of Mexico Showing the Excellent Masonry Abutments that are so Characteristic of Mexican Structures

AIDED by a generally better business tone and particularly by a marked revival in the mining and agricultural industries, the upward trend in revenues which was first evidenced on the National Railways of Mexico in 1933 and continued during 1934, was extended through the year just closed. As a consequence, while the increase in revenues was proportionately not as great in 1935 as in 1934, it had the effect of bringing the gross into new high ground since 1931, while several classifications of freight traffic produced revenues that exceeded the comparable figures for the peak year of 1929.

Since the middle of the year the National Railways of Mexico have been operated under the direction of a new group of administrative and executive officers, which includes Eduardo Suarez as chairman of the board, Antonio Madrazo as executive president, General Francisco Mujica as vice-president, C. C. Rochin as vice-president in charge of operations, Manual Valdez Orozco as general superintendent of express, and Julian Hernandez as general superintendent of transportation. Further extensive changes were made among officials of all departments.

Under the direction of the new regime the policy of the company regarding the control of operating expenses and expenditures for improvements has been revised somewhat. In contrast to the practice of recent years when drastically curtailed traffic and revenues required the maintenance of an iron grip on expenditures, the policy of the new management has been to regard operating expenses with a somewhat more liberal attitude. While such an attitude has been justified in some measure by the increased revenues, the policy of the new management is to sacrifice earnings to some extent in order to afford more frequent train service and to improve the physical condition of the properties. As a consequence, whereas gross revenues during the first nine months of the year increased 11.1 per cent as compared with the same period in 1934, operating expenses expanded 16.4 per cent, with the result that net from railway operations dropped 3 per cent and the operating ratio rose from 72.5 per cent to 76 per cent.

The labor situation, which had been generally unsatisfactory for some time owing to the existence of considerable ill feeling between the management and the Union of Railroad Workers of the Mexican Republic showed substantial improvement during the year and the bad feeling was eliminated.

Gross earnings increased from $77,384,170 in the first nine months of 1934, to $85,963,338 in the corresponding period of 1935; freight earnings increased from $55,922,832 to $60,577,309 (8.3 per cent); passenger revenues increased from $13,691,745 to $16,471,415 (20.3 per cent); express earnings from $6,533,557 to $7,478,955 (14.5 per cent); and miscellaneous earnings from $1,236,036 to $1,435,659 (16.1 per cent). Over the same periods total operating expenses increased from $56,107,228 to $65,324,528 (16.43 per cent). The result was that the net from railway operations dropped from $21,276,942 to $20,638,810 (3 per cent).

The increase in passenger revenues has proved particularly gratifying and it is expected, in view of the increasing tourist travel through Mexico, that the upward trend will continue. However, the construction of highways is continuing at an accelerated pace and it is anticipated that some loss in passenger travel over the

railroad may be experienced when the new highway between Laredo, Tex., and Mexico, D. F., is opened for traffic in May, 1936.

Operating Statistics

The statistical material given below, as well as that presented above, applies only to the National Railway System and covers the first nine months of the year in comparison with the same period in 1934.

Total locomotive-kilometers increased from 24,007,428 to 27,017,970 (12.5 per cent); passenger train-kilometers increased from 6,733,224 to 7,964,331 (18.3 per cent); while mixed train-kilometers, continuing the trend that has prevailed for several years, decreased from 3,888,527 to 3,560,571 (8.4 per cent); and work train-kilometers increased from 104,603 to 118,430 (13.2 per cent). Total train-kilometerage increased 2,270,896 (12 per cent). Passenger car-kilometers increased from 58,397,277 to 66,017,332 (13.0 per cent); loaded freight car-kilometers increased from 138,864,014 to 151,124,024 (8.8 per cent); and empty car-kilometers rose from

The Yard of the National Railways of Mexico at Tampico, Tamp., the Most Important Port on the System

67,558,767 to 72,792,903 (7.7 per cent), the total increase in car-kilometerage being 17,495,146 (8.5 per cent). Car-days advanced from 4,188,504 to 4,473,960 (6.8 per cent).

The total number of cars loaded, including those received from foreign lines, increased from 311,020 to 330,590 (6.3 per cent), while net ton-kilometers increased from 3,356,339 to 3,700,218 (6.4 per cent). Gross ton-kilometers increased from 8,069,866 to 8,788,784 (8.9 per cent). Utilization of motive power by the transportation department decreased from 73.0 to 70.7.

Indicating that a somewhat lower tonnage was carried per train, the net ton-kilometers per train-kilometer decreased from 346 to 341 (1.4 per cent), while the gross ton-kilometers per train-kilometer decreased from 774 to 765 (1.2 per cent). As a consequence, with the average speed of freight trains showing a decrease from 23.3 to 22.7 kilometers per hour, the gross ton-kilometers per train-hour dropped from 18,026 to 17,359 (3.7 per cent). These results reflect in some measure the policy of the present management of operating a larger number of trains in order to provide more frequent service.

Principally because of an increase in the price of fuel oil of $0.56 (70 per cent) per 100 liters the out-of-pocket cost of train operation, including the wages of the enginemen and trainmen and the cost of fuel, showed a marked increase. Another factor in this situation was an increase in the consumption of fuel oil from 48.1 to 49.3 (2.5 per cent) liters per 1000 gross ton-kilometers handled. Thus, while the number of gross ton-kilometers handled rose 8.9 per cent, the consumption of fuel oil increased from 268,676,868 liters to 304,552,976 liters, or 13.35 per cent.

Substantial increases were noted in the unit expenditures for repairs to locomotives and freight cars, while such expenditures on passenger equipment showed a decline. In making repairs to locomotives the cost of labor per 1000 kilometers run increased from $212.43 to $233.97 (10.1 per cent), while material costs rose from $123.83 to $155.93 (25.9 per cent), the increase in the combined figures being from $336.26 to $389.90 (16 per cent). Freight car repairs per 1000 kilometers run increased from $11.55 to $12.22 (5.8 per cent) for labor and from $17.18 to $17.43 (1.5 per cent) for material, with a combined increase from $28.73 to $29.65 (3.2 per cent). On the other hand, passenger car repair costs (labor) decreased from $15.03 to $14.34 (4.6 per cent), while the cost of materials declined from $15.35 to $13.32 (13.2 per cent), the reduction in the total figures being from $30.38 to $27.26 (10.3 per cent).

Table I—Classified Freight Transported in Tons (Nine Months)

	1935	1934	Inc.	Dec.
Pulque (alcohol beverage)	80,472	82,731	.....	2,259
Rice	45,726	35,292	10,434	.....
Fuel oil	264,476	256,111	8,365	.....
Cotton	63,384	60,455	2,929	.....
Sugar	135,716	108,158	27,558	.....
Coffee	36,583	45,805	.....	9,222
Coal	191,722	89,760	101,962	.....
Charcoal	118,550	122,174	.....	3,624
Cement	122,005	122,360	.....	355
Beer	66,290	44,295	21,995	.....
Coke	221,559	178,724	42,835	.....
Construction steel	50,823	44,474	6,349	.....
Fruits	322,856	192,170	130,686	.....
Beans	71,300	88,054	.....	16,754
Gasoline	161,343	158,847	2,496	.....
Cattle	103,165	95,144	8,021	.....
Flour	74,977	77,178	.....	2,201
Lumber	265,424	253,909	11,515	.....
Corn	418,179	420,004	.....	1,825
Lard	14,822	37,372	.....	22,550
Machinery	22,652	20,950	1,702	.....
Bullion	128,363	144,302	.....	15,939
Petroleum	169,415	126,747	42,668	.....
Minerals	897,715	690,124	207,591	.....
Wheat	159,426	190,546	.....	31,120
Salt	63,892	51,883	12,009	.....
Liquors and Wines	10,921	9,141	1,780	.....
Miscellaneous	2,230,181	2,049,157	181,024	.....
Totals	6,511,937	5,795,867	821,919	105,849

Net Increase 716,070 Tons

Table II—Loaded Cars Interchanged

	Imports		Exports	
	1934	1935	1934	1935
Laredo	3,976	4,264	3,039	7,161
El Paso	1,384	1,362	1,353	2,112
Eagle Pass	592	841	1,946	981
Brownsville	244	203	117	403
Total	6,196	6,670	5,555	10,657
Water Ports				
Tampico	7,126	7,563	884	951
Veracruz	3,823	5,929	1,812	1,521
Manzanillo	44	24	419	660
Total	10,993	13,516	3,115	3,132

The average number of locomotives available for service, including those stored, increased 13.5 per cent, while serviceable locomotives stored dropped 8.7 per cent. The percentage of serviceable locomotives to the total showed no appreciable change.

The situation regarding freight traffic is given in Table I. From this tabulation it will be seen that, while

(*Continued on page 82*)

Bankruptcies Break Record in 1935

Almost 30,000 miles of line added to record total already in hands of courts—Financial outlook now brightening

By J. G. Lyne
Financial Editor

THE outstanding development in railway finance during the year was the huge mileage which went into bankruptcy. Sixteen companies operating a total of 29,018 miles were added to the already swollen list of those in difficulties, making a total of 89 companies with 71,658 miles of line which are now operated under the jurisdiction of the courts. L. F. Loree, president of the Delaware & Hudson, had maps prepared showing railroad bankruptcies of the present, and those of the 'Seventies and the 'Nineties. These maps are reproduced herein. It will be noted from them that, while the mileage operated by the courts since 1930 is greater than ever before in history, the proportion of mileage which is, or has been recently, in the hands of the courts to total railway mileage is less than it was in the 'Seventies and just about equal to that of the 'Nineties. In the 'Seventies and 'Nineties, however, there was no Reconstruction Finance Corporation. Without the services of that institution the present total of railways in financial difficulties would be considerably swelled.

Market Fluctuations Narrow

The market prices of railway securities fluctuated within a relatively narrow range during the year, as is shown in Chart B herewith. The *Railway Age* average price of 20 representative bonds began the year at 75.86, attained a high of 76.56 in the second week of the year; subsequently declined in April to a low of 70.32; then rose gradually to 76.06 in June; thence declined once more to 71.50 in October; since which there has been an increase to above 75. This index is, it will be seen, slightly lower as the year closes than it was at the beginning.

The fluctuation in stock prices, as might be expected, has occupied a rather wider range. The *Railway Age* average price of 20 stocks started the year at 34 and subsequently sank to a low of 28 in March. Since that time a rising tendency has persisted, in recent weeks at an accelerated rate, so that the year closes with the index well above 40—a material improvement over the beginning of the year.

Recovery in security prices has been much less marked on the railroads than in the case of industrials. The Wall Street Journal publishes current indices of both railroad and industrial stocks. Its average of railroad stock prices shows an increase of only two or three points during the course of the year, while the average of industrials amounted from 104 at the beginning of the year to approximately 140 toward its close.

The slowness of railroad recovery is reflected also in Chart A, which sets forth the movement of the *Railway*

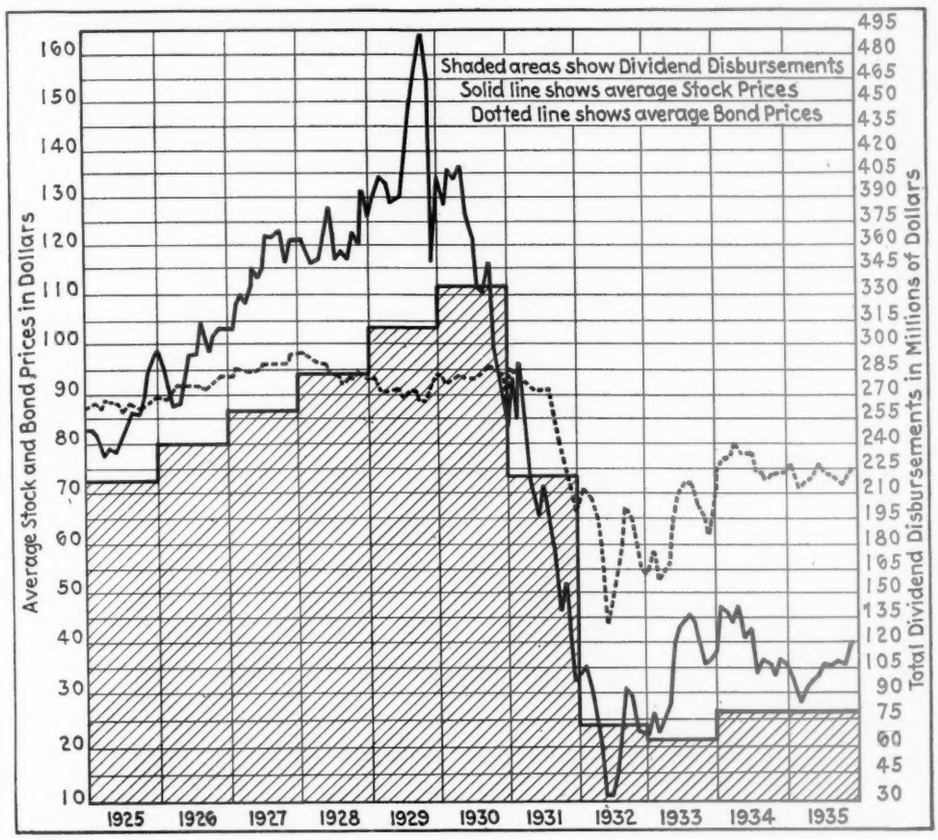


Chart A—Average Prices of Twenty Stocks and Twenty Bonds, with Dividends of Twenty Railroads on Same Relative Scale
1935 Dividends Estimated

Age average prices of representative stocks and bonds over an 11-year period. It will be seen that prices, in spite of the recent improvement, are still materially lower than they were in either the middle of 1933 or the early months of 1934. There is one most encouraging aspect of this chart, however, and that is that the

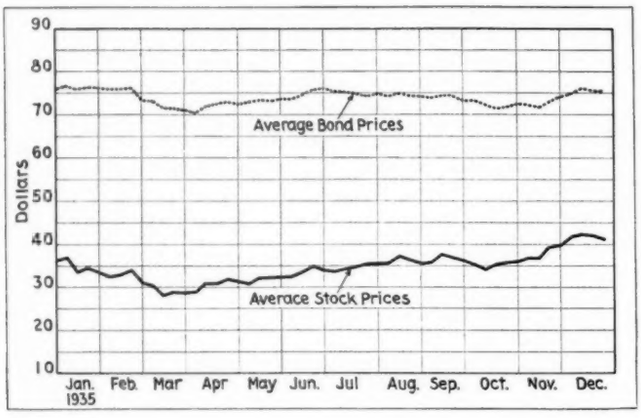


Chart B—Fluctuations in the Average Price of Twenty Leading Railroad Stocks and Twenty Bonds in 1935

curve of stock prices in 1935 for the first time since 1928 assumed the characteristic rising tendency throughout the latter half of the year which it maintained in the pre-depression years. While this development does not of itself assure continued improvement in the coming year, it at least fulfills a condition without which substantial improvement could hardly be expected to occur. Dividend payments by the roads the stocks of which are used in arriving at the *Railway Age* stock averages are also shown in Chart A on the same relative scale. Virtually no change occurred in these payments as compared with the preceding year.

Little New Financing

New financing was very light during the year, the total falling well below that even of 1934, but it exceeded that of 1933 and 1932. For the most part the issues were bonds of subsidiaries guaranteed by the parent company. A remarkable development in the latter months of the year was the sale of equipment trust certificates by two railroads at prices making the cost well under 3 per cent, auguring well for the railways' ability to finance equipment purchases which many will be forced to make in coming months if traffic improvement is maintained. Another event pointing to refinancing at attractive interest levels during the coming year came in the offer made by the Reconstruction Finance Corporation in December to underwrite a 10-year loan of $100,000,000 to the Great Northern at 4 per cent with no underwriter's fee. The bankers had previously offered to handle the transaction on a 5 per cent basis plus a commission of one per cent. The Reconstruction Finance Corporation offer, of course, represents a substantial saving to the railroad. Since the operation involves an issue now paying interest at 7 per cent, the net saving to the railroad in interest charges will total some $3,000,000

Table I—Comparison of Dividends and Taxes, 1911 to 1934

Year Ended June 30	Dividends*	Proportion of Net Income Paid in Dividends	Taxes*
1911	$397,068,724	81	$98,626,848
1912	339,964,855	85	109,445,407
1913	322,300,406	66	118,386,859
1914	376,098,785	108	135,572,579
1915	259,809,520	82	133,276,330
1916	281,936,371	47	145,517,034
Year Ended December 31			
1916	306,176,937	47	157,113,372
1917	320,395,779	53	213,920,095
1918	275,336,547	71	223,175,379
1919	278,516,908	62.5	232,601,396
1920	271,731,669	63	272,061,453
1921	298,511,328	95	275,875,990
1922	271,573,751	73	301,034,923
1923	296,127,048	53	331,915,459
1924	320,429,767	57	340,336,686
1925	342,020,885	49	358,516,046
1926	399,243,963	49	388,922,856
1927	411,581,093	61	376,110,250
1928	430,677,138	55	389,432,415
1929	490,125,673	55	396,682,634
1930	497,024,912	95	348,553,953
1931	330,150,873	245	303,528,099
1932	92,354,322	166	275,135,399
1933	95,725,783	116	249,623,190
1934	133,418,896	108	239,624,802

* Not including switching and terminal companies.

Table II—R. F. C. Loans on November 30, 1935

	Authorized	Disbursed	Repaid
Aberdeen & Rockfish	$127,000	$127,000	$18,000
Alabama, Tennessee and Northern	275,000	275,000	.....
Alton	2,500,000	2,500,000	605,367
Ann Arbor (Receivers)	634,757	634,757	34,757
Ashley, Drew & Northern	400,000	400,000	50,000
Baltimore & Ohio (Note)	77,125,000	77,110,400	12,144,900
Birmingham & Southeastern	41,300	41,300	5,300
Boston & Maine	7,569,437	7,569,437	.....
Buffalo, Union-Carolina	53,960	.....	.....
Carlton & Coast	549,000	535,800	9,077
Central of Georgia	3,124,319	3,124,319	230,028
Central of New Jersey	500,000	464,298	464,298
Chicago & Eastern Illinois	5,916,500	5,916,500	155,632
Chicago & North Western	46,589,133	46,588,133	3,938,000
Chicago Great Western	1,289,000	1,289,000	838
Chicago, Milwaukee, St. Paul & Pacific	12,000,000	11,500,000	538
Chicago North Shore & Milwaukee	1,150,000	1,150,000	.....
Chicago, Rock Island & Pacific	13,718,700	13,718,700	.....
Cincinnati Union Terminal	10,398,925	8,300,000	8,300,000
Colorado & Southern	28,978,900	28,925,300	1,000,000
Columbus & Greenville	60,000	.....	.....
Copper Range	53,500	53,500	53,500
Denver & Rio Grande Western	8,300,000	8,081,000	500,000
Denver & Salt Lake Western	3,182,150	3,182,150	71,300
Erie	16,582,000	16,582,000	4,690
Eureka Nevada	3,000	.....	.....
Florida East Coast (Receivers)	717,075	627,075	.....
Fort Smith & Western (Receivers)	227,434	227,434	.....
Fredericksburg & Northern	15,000	.....	.....
Gainesville Midland (Receivers)	10,539	.....	.....
Galveston, Houston & Henderson	1,061,000	1,061,000	.....
Georgia & Florida (Receivers)	354,721	354,721	.....
Great Northern	6,000,000	6,000,000	6,000,000
Greene County	13,915	13,915	3,915
Gulf, Mobile & Northern	$520,000	$520,000	$520,000
Illinois Central	17,863,000	17,840,333	85,000
Lehigh Valley	9,500,000	8,500,000	.....
Litchfield & Madison	800,000	800,000	800,000
Maine Central	2,550,000	2,550,000	112,803
Maryland & Pennsylvania	100,000	100,000	.....
Meridian & Bigbee River (trustee)	1,729,252	700,000	.....
Minneap., St. Paul & S. S. Marie	6,843,082	6,843,082	547,325
Mississippi Export R. R.	100,000	100,000	25,000
Missouri-Kansas-Texas	2,300,000	2,300,000	.....
Missouri Pacific	23,134,800	23,134,800	.....
Missouri Southern	99,200	99,200	.....
Mobile & Ohio	785,000	785,000	785,000
Mobile & Ohio (Receivers)	1,070,599	1,070,599	193,000
Murfreesboro-Nashville	25,000	25,000	.....
New York Central	27,499,000	27,499,000	.....
New York, Chicago & St. Louis	18,200,000	18,200,000	2,688,413
New York, New Haven & Hartf.	7,700,000	7,699,779	13,724
Pennsylvania	29,500,000	28,900,000	28,900,000
Pere Marquette	3,000,000	3,000,000	.....
Pioneer & Fayette	10,000	10,000	2,000
Pittsburgh & West Virginia	4,475,207	4,475,207	.....
Puget Sound & Cascade	300,000	300,000	.....
St. Louis-San Francisco	7,995,175	7,995,175	2,805,175
Salt Lake & Utah (Receiver)	200,000	200,000	.....
Sand Springs	162,000	162,000	.....
Southern Pacific	23,200,000	22,000,000	.....
Southern Railway	14,751,000	14,751,000	257,460
Sumpter Valley	100,000	100,000	31,800
Tennessee Central	147,700	147,700	.....
Texas, Oklahoma & Eastern	108,740	.....	.....
Texas & Pacific	700,000	700,000	700,000
Texas South-Eastern	30,000	30,000	30,000
Tuckerton	45,000	39,000	81
St. Louis-Southwestern	18,790,000	18,672,250	790,000
Wabash (Receivers)	15,731,583	15,731,583	.....
Western Pacific	4,366,000	4,366,000	1,403,000
Wichita Falls & Southern	400,000	400,000	25,000
Wrightsville & Tennille	22,525	22,525	22,525
Totals	$494,375,728	$487,122,572	$74,327,446

NOTE:—In addition to the above loans authorized, the Corporation has approved in principal loans in the amount of $130,922,097.00 upon the performance of specified conditions. Loans to the Baltimore & Ohio outstanding amounting to $64,965,500 are evidenced by collateral notes of the railroad in the total face amount of $65,100,400; part of the outstanding loans was refunded by acceptance of the railroad's five year 4½ per cent secured note due August 1, 1939, in the amount of $13,490,000 at a discount of 1 per cent equivalent to $134,900.

Table III—Major Bond and Note Issues of 1934

Issue	Maturity	Amount	Int. Rate%	Sold to Banker Price	Sold to Banker % Cost	Offered to Public Price	Offered to Public % Yield	Banker
Atlantic Coast Line, Collateral Trust Notes....	1945	$12,000,000	5	97½	5.325	100	5	Brown, Harriman & Co., et al.
Chicago Union Station, First Mortgage Bonds.	1963	16,000,000	4	98½	4.134	101	3.94	Kuhn, Loeb & Co., et al.
Chicago Union Station, Guaranteed Bonds....	1944	2,100,000	4	99	4.09	...	...	Kuhn, Loeb & Co., et al.
Kentucky & Indiana Terminal, First Mortgage Bonds	1961	651,000	4½	90	5.213	99½	...	Whiting, Weeks & Knowles, Inc., et al.
Lehigh & New England, General Mortgage Bonds	1965	6,500,000	4	98	4.117	100	4	Kidder, Peabody & Co., et al.
Monongahela, First Mortgage Bonds.....	1960	12,000,000	4	99¼	4.05	101½	3.9	Kuhn, Loeb & Co., et al.
New York Central (B. & A. main line first mortgage bonds guaranteed by N.Y.C.).....	1943	9,000,000	4½	94¾	5.314	96¾	5	Whiting, Weeks & Knowles, Inc., et al.
New York Central (T. & O.C. refunding and improvement mortgage bonds, guaranteed by N.Y.C.)	1960	12,500,000	3¾	97	3.94	99	...	First Boston Corp., et al.
Pennsylvania Company Bonds, Secured by N. & W. Stock	1963	50,000,000	4	97½	....	100	4	Kuhn, Loeb & Co., et al.

Major Issues of Equipment Trust Certificates

Road	Maturity	Amount	Int. Rate	Sold to Banker Price	Sold to Banker % Cost	Offered to Public Price	Offered to Public % Yield	Offered By
Boston & Maine.....	1936–44	$2,670,000	3½	.....	....	.....	1.27 –3.24	Whiting, Weeks & Knowles, Inc., et al.
Chesapeake & Ohio.....	1936–50	9,000,000	3	.....	2.845	.....	0.625–3.05	First Boston Corp., et al.
Pennsylvania	1936–49	15,282,000	4	100*	4	.....	⅜–3.075	Salomon Bros. & Hutzler, et al.
Pennsylvania	1936–50	18,420,000	2¾	100.283	2.71	.....	½–3.00	First Boston Corp., et al.

* Sold by railroad to P.W.A., subsequently transferred to R.F.C. and sold by it to bankers at premium of $76.55 per $1000 certificate.

Table IV—Railway Securities Sold to Public in 1916 and 1920 to 1935

Year	Bonds	Notes	Stock	Total R.R. financing	Total all financing	Per Cent R.R. to total
1916.....	$229,000,000	$126,000,000	$16,000,000	$371,000,000	$1,864,000,000	19.90
1920.....	194,583,000	193,840,000	3,737,000	392,160,000	3,324,922,000	12.12
1921.....	455,125,000	202,928,300	27,222,500	685,275,800	2,780,874,000	24.64
1922.....	299,025,800	288.936,500	27,068,100	615,030,400	3,200,176,000	19.22
1923.....	165,956,000	354,720,500	59,140,850	579,817,350	3,602,704,000	16.04
1924.....	620,347,000	351,276,200	11,000,000	982,623,200	4,185,590,000	23.46
1925.....	374,020,500	151,753,740	30,934,430	556,708,670	5,234,992,000	10.63
1926.....	241,954,000	172,477,000	41,577,200	456,008,200	5,746,354,000	7.94
1927.....	686,939,500	89,184,600	210,596,900	986,721,000	7,830,641,000	12.61
1928.....	525,719,000	79,911,000	187,369,100	792,999,100	8,473,880,000	9.4
1929.....	418,984,000	180,322,000	275,269,240	874,575,240	11,007,170,000	7.9
1930.....	800,694,000	142,168,000	63,805,600	1,006.667,600	5,920,498,000	17.0
1931.....	453,824,000	105,209,000	.....	559,033,000	2,730,082,000	20.5
1932.....	11,827,000	13,125,000	.....	24,952,000	684,806,000	3.6
1933.....	12,000,000	.....	.....	12,000,000	335,812,000	3.6
1934.....	172,074,000	71,068,000	.....	243,142,000	618,627,000	39.3
1935*.....	107,746,000	36,282,000	.....	144,028,000	2,039,316,050	7.1

* 11 Months Total as compiled by Dow Jones & Co.

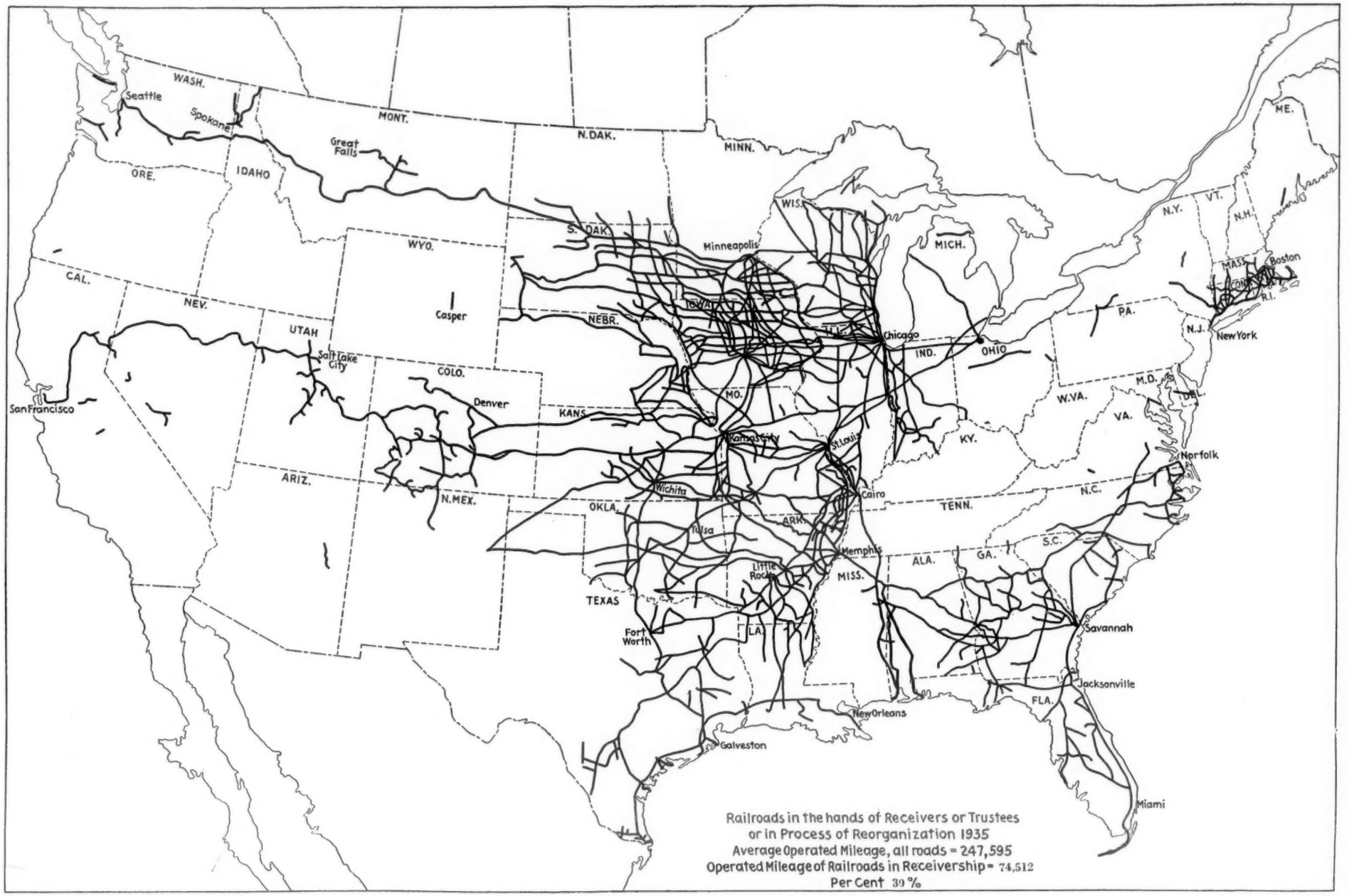
Table V—Railroad Securities Sold to Reconstruction Finance Corporation by Public Works Administration

As of January 1, 1936

Par Value	Name of Issue	Held by R.F.C.	Sold to Public or Repaid by R.R. to R.F.C.[b]	Date of Transfer	Proceeds of Sale (Excluding Interest)	Interest Received on Sale	Profit or *Loss* (Suspense Items*)
$500,000	Baltimore & Ohio 4% Reg. Ser. Notes.....	.....	$500,000[b]	Various	$500,000.00	$6,444.45	.....
176,000	Boston & Maine Eq. Trust of 1934.....	.....	176,000[b]	Various	175,707.72	.....	*$282.28*
1,725,000	Boston & Maine 4% Reg. Coll. Notes.....	$1,376,000	349,000[b]	Various	1,724,797.47	11,637.11	*202.53*
109,000	Central of Georgia Rec. Certificates.....	109,000	.....	8/ 1/35	109,000.00	363.33	.....*
15,938,000	Chesapeake & Ohio Eq. Tr. of 1934.....	.....	15,938,000[a]	Various	15,970,789.10	.....	32,789.10
231,000	Chicago & Eastern Illinois Trustee's Certs.....	231,000	.....	8/ 1/35	231,000.00	770.00	.....*
1,120,000	Chicago Great Western Eq. Tr. of 1934.....	940,000	180,000[b]	Various	1,114,468.18	.....	*46.19*
							*5,485.63**
3,619,000	Delaware, Lackawanna & Western Eq. Tr. of 1934	3,619,000	.....	8/ 1/35	3,586,051.30	.....	*32,948.70**
250,000	Grand Trunk Western 4% Reg. Ser. Notes.....	.....	250,000[b]	6/24/35	249,917.50	.....	*82.50*
5,785,000	Great Northern Coll. Notes and Bonds.....	5,785,000	.....	8/ 1/35	5,737,850.03	13,173.33	*47,149.97**
29,000	Gulf, Mobile & Northern Eq. Tr. of 1934.....	.....	29,000[b]	10/28/35	28,992.74	71.56	*7.26*
200,000	Illinois Central Eq. Tr. of 1934, Ser. Q.....	.....	200,000[b]	7/23/35	200,000.00	1,511.11	.....
250,000	Interstate Eq. Tr. Ser. F of 1934.....	.....	250,000[a]	1/30/35	242,700.00	.....	*7,300.00*
254,000	Kansas, Oklahoma & Gulf 4% Reg. Ser. Notes..	.....	254,000[b]	6/24/35	254,000.00	2,060.22	.....*
1,204,000	Lehigh & New England Eq. Tr. of 1934.....	.....	1,204,000[a]	8/17/34	1,168,012.44	.....	*35,987.56*
223,000	Lehigh Valley Secured Coll. Notes.....	.....	223,000[b]	7/23/35	223,000.00	2,136.44	.....
313,000	Maine Central 4% Reg. Ser. Coll. Notes.....	292,000	21,000[b]	10/10/35	313,000.00	3,999.44	.....*
36,000	Midland Continental Eq. Tr. of 1934.....	36,000	.....	8/ 1/35	35,834.04	.....	*165.96**
32,500	Missouri Southern Eq. Tr. of 1934.....	32,500	.....	8/ 1/35	31,708.88	.....	*791.12**
4,809,000	N. Y., Chicago & St. Louis Eq. Tr. of 1934....	4,809,000	.....	8/ 1/35	4,803,619.48	13,135.77	*5,380.52**
235,000	N. Y., Ontario & Western Reg. Ser. Coll. Notes	132,000	103,000[b]	Various	234,970.43	2,990.67	*29.57*
1,220,000	Northern Pacific Eq. Tr. of 1934.....	.....	1,220,000[a]	12/18/34	1,223,538.00	.....	3,538.00
15,525,000	Pennsylvania Eq. Tr. Ser. E of 1934.....	.....	15,282,000[a]				
			243,000[b]	4/ 1/35	15,448,292.28	25,350.00	1,093.129.38*
3,648,000	Pennsylvania 4% Serial Notes.....	.....	3,648,000[b]	Various	3,643,774.87	.....	*4,225.13*
31,900,000	Pennsylvania 4% Sec. Serial Bonds.....	30,800,000	1,100,000[b]	12/19/35	31,899,617.40	196,978.67	*382.60**
331,000	Pittsburgh & West Virginia Eq. Tr. of 1934....	331,000	.....	8/ 1/35	329,184.26	.....	*1,815.74**
12,000,000	Southern Pacific Coll. Tr. Bonds.....	12,000,000	.....	8/ 1/35	11,903,108.69	60,800.00	*96,891.31**
$101,662,500		$60,492,500	$41,170,000		$101,382,934.81	$341,422.10	$890,281.91
					Net Actual		*11,835.92*
					Net Suspense		$902,117.83*
					Credit Balance, R.F.C.		$1,169,837.10

Repayments of Securities by Railroad Companies to Public Works Administration

$9,000	Chicago & Eastern Illinois Trustee's Certificate.	12/ 6/34	$9,000.00
40,000	Chicago & North Western 4% Reg. Ser. Coll. No	7/25/34	40,000.00
26,000	Chicago, Milwaukee, St. Paul & Pacific 4% Reg.	10/ 1/34	26,000.00
1,000	Kansas, Oklahoma & Gulf 4% Reg. Serial Note.	6/11/34	1,000.00
8,000	Lehigh & New England Equipment Trust of 1934	9/29/34	8,000.00
$84,000			$84,000.00
$101,746,500			



Map by Courtesy of L. F. Loree.

Bankrupt Railroads of the Present Depression

Railroads shown hereon are those listed in Table VIII, on pages 45 and 46, plus a few small lines which have been operated by receivers in the period since 1930 but which are not so operated today.

annually. The Reconstruction Finance Corporation also made an offer to the Illinois Central to advance it funds at 4 per cent to meet a maturity next July of an issue of $8,000,000 of 6½ per cent notes.

Table VI—Railroad Securities Held by Public Works Administration

As of January 1, 1936

Akron, Canton & Youngstown 4% Registered Serial Certificates of Indebtedness	$380,000
Baltimore & Ohio 4% Registered Serial Collateral Notes	3,915,000
Baltimore & Ohio Equipment Trust Certificates, Series H	1,900,000
Boston and Maine 4% Registered Serial Collateral Notes	2,965,000
Boston and Maine Equipment Trust Certificates, No. 6 of 1934	2,452,000
Chicago, Milwaukee, St. Paul and Pacific 4% Registered Serial Collateral Notes	2,291,000
Chicago, Milwaukee, St. Paul and Pacific Equipment Trust Certificates, Series M and N	1,657,000
Chicago and North Western 4% Registered Serial Collateral Notes	1,360,000
Delaware, Lackawanna & Western Equipment Trust of 1934, Series B	1,033,000
Erie Equipment Trust Certificates of 1934	11,114,000
Erie 4% Registered Serial Collateral Notes	3,638,000
Gulf, Mobile and Northern Equipment Trust Certificates of 1934	755,000
Gulf, Mobile and Northern 4% Registered Serial Collateral Notes	467,000
Illinois Central Equipment Trust Certificates, Series Q	14,800,000
Lehigh Valley Equipment Trust Certificates of 1934, Series V	3,345,000
Lehigh Valley 4% Registered Serial Collateral Notes	1,777,000
New York Central 4% Registered Serial Collateral Notes	3,950,000
New York, New Haven and Hartford Equipment Trust of 1934	2,227,000
New York, New Haven and Hartford 4% Registered Serial Collateral Notes	4,800,000
Norfolk Southern Equipment Trust Certificates, Series A	900,000
Pennsylvania Equipment Trust Certificates, Series F	19,092,000
Wabash Serial Receiver's Certificates	1,443,000
Wabash First Mortage 4% Serial Bonds	584,000
	$86,845,000

There was an increase in Reconstruction Finance Corporation loans for the eleven months ended November 30 of $39,839,300, which compares with an increase of $53,189,014 in the year 1934. The total disbursements on November 30, 1935, had been $487,122,572 of which

Table VII—Mileage in the Hands of Receivers or Trustees

(Figures to 1934, Inclusive, from I. C. C. Statistics for Year Ended December 31, 1934. Figures for 1935 Compiled by *Railway Age*.)

Year ended	Miles of road operated by receivers or trustees at close of year	Net change during year in miles of road operated	No. of roads in charge of receivers or trustees at close of year
June 30, 1894	40,819	.....	192
1895	37,856	−2,963	169
1896	30,476	−7,380	151
1897	18,862	−11,614	128
1898	12,745	−6,117	94
1899	9,853	−2,892	71
1900	4,178	−5,675	52
1901	2,497	−1,681	45
1902	1,475	−1,022	27
1903	1,185	−290	27
1904	1,323	+138	28
1905	796	−527	26
1906	3,971	+3,175	34
1907	3,926	−45	29
1908	9,529	+5,603	52
1909	10,530	+1,001	44
1910	5,257	−5,273	39
1911	4,593	−664	39
1912	9,786	+5,193	44
1913	16,286	+6,500	49
1914	18,608	+2,322	68
1915	30,223	+11,615	85
1916	37,353	+7,130	94
Dec. 31, 1916	34,804	−2,550*	80
1917	17,376	−17,428	82
1918	19,208	+1,832	74
1919	16,590	−2,618	65
1920	16,290	−300	61
1921	13,512	−2,778	68
1922	15,259	+1,747	64
1923	12,623	−2,636	64
1924	8,105	−4,518	61
1925	18,687	+10,582	53
1926	17,632	−1,055	45
1927	16,752	−880	40
1928	5,256	−11,496	33
1929	5,703	+447	29
1930	9,486	+3,783	30
1931	12,970	+3,484	45
1932	22,545	+9,575	55
1933	41,698	+19,153	78
1934	42,168	+470	80
1935	71,658	+29,490	89

* Represents decrease for six months.

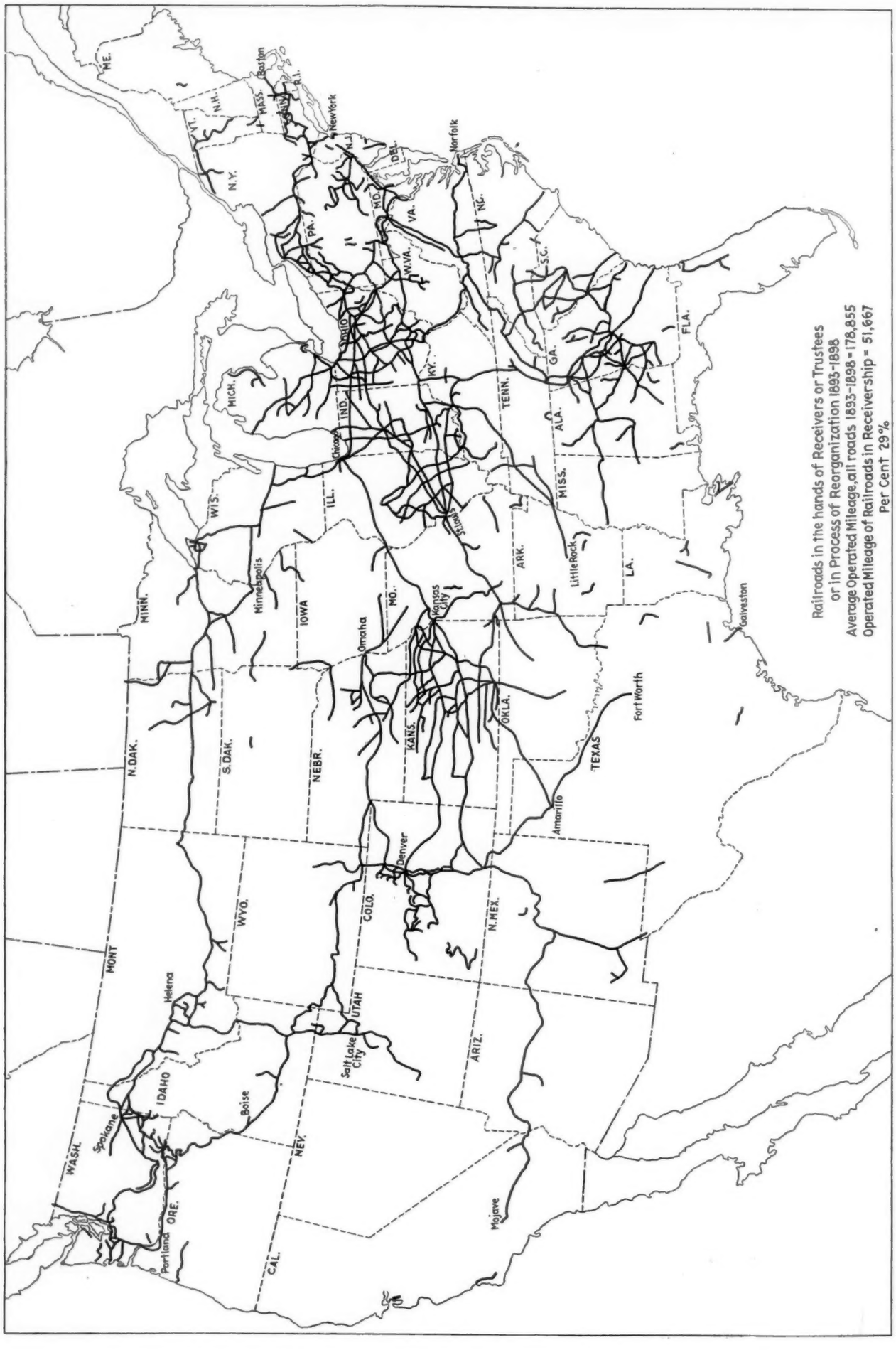
Table VIII—Railroads in the Hands of Receivers or Trustees on December 31, 1935

Road	Mileage operated	Mileage owned	Date of receivership or trusteeship	Funded debt outstanding	Capital stock outstanding	Total old company securities	Remarks
Akron, Canton & Youngstown	171	19	Apr. 3, 1933	$3,550,000	$1,500,000	$5,510,000	
Northern Ohio	....	152	Apr. 3, 1933	3,300,000*	4,230,000	7,530,000	
Alabama, Tennessee & Northern	218	215	Dec. 14, 1934	4,224,289	3,916,560	8,292,349	
Apache	72	72	Sept. 29, 1931	1,055,000	600,000	1,655,000	
Apalachicola Northern	99	99	May 28,1932	2,000,000	1,000,000	3,000,000	
California & Oregon Coast	15	15	Feb. 19, 1925	528,199	350,000	903,199	
Cape Girardeau Northern	13	104	Apr. 14, 1914	1,146,000	110,000	1,431,900	
Central of Georgia	1927	1460	Dec. 19, 1932	53,722,000	20,000,000	76,684,000	
Chesapeake Beach	3	3	Jan. 1, 1935	998,000	1,000,000	1,998,000	
Chicago & Eastern Illinois	939	822	Sept. 15, 1933	33,587,036	45,891,400	80,373,436	
Chicago & North Western	8428	8350	June 28, 1935	305,797,000	180,869,503	508,742,503	
Chicago, Attica & Southern	155	140	Aug. 4, 1931	441,200	2,294,452	2,735,652	
Chicago Great Western	1511	1018	Mar. 1, 1935	36,044,000	92,282,900	134,407,940	
Chicago, Indianapolis & Louisville	644	618	Dec. 30, 1933	26,071,000	15,488,300	42,311,230	
Chicago, Milwaukee, St. Paul & Pacific	11,123	10,092	June 29, 1935	449,384,184†	224,483,213	699,539,397	Capital stock includes 1,174,060 shares common of no par value.
Chicago, Rock Island & Pacific	7574	5293	June 7, 1933	249,279,000	128,892,511	413,179,511	
Chicago, Rock Island & Gulf	722	633	Oct. 31, 1933	16,583,000	637,000	17,220,000	
Choctaw, Oklahoma & Gulf	....	943	Oct. 31, 1933	8,936,000	15,827,500	24,763,500	
Rock Island & Dardanelle	....	14	Oct. 31, 1933	100,000	100,000	200,000	
Rock Island, Arkansas & Louisiana	....	376	Aug. 31, 1933	15,315,600	1,768,000	17,083,600	
Rock Island, Memphis Terminal	....	‡	Oct. 31, 1933	1,300,000	1,000	1,301,000	
Rock Island, Omaha Terminal	....	‡	Oct. 31, 1933	906,000	10,000	916,000	
Rock Island, Stuttgart & Southern	....	21	Oct. 31, 1933	180,000	300,000	480,000	
St. Paul & Kansas City Short Line	....	417	Aug. 31, 1933	27,812,150	50,000	27,862,150	
Chicago, Springfield & St. Louis	87	79	Jan. 24, 1930	500,000	205,105	705,105	This road was sold at foreclosure sale on June 25, 1931, but the receiver is still operating the property.
Colorado—Kansas	23	22	July 1, 1931	None	None	.....	Obligations and indebtedness pursuant to trustee's sale of foreclosure and receivership, $25,170.57. Following trustee's foreclosure sale on Sept. 30, 1932, receiver was discharged and reappointed during the redemption period for the bondholders.
Copper Range	170	141	Mar. 26, 1935	2,280,000	2,000,000	4,280,000	
Denver & Rio Grande Western	2584	2409	Nov. 1, 1935	127,916,000	78,887,539	210,628,539	
Florida East Coast	812	806	Sept. 1, 1931	57,000,000	37,500,000	99,453,075	
Fonda, Johnstown & Gloversville	66	62	Apr. 20, 1933	6,154,000	3,000,000	9,210,927	
Fort Smith & Western	250	197	June 1, 1931	5,244,000	1,248,000	6,719,434	Capital stock represented by 62,400 shares of no par value. See *Railway Age*, Jan. 5, 1929, p. 67.
Gainesville Midland	74	72	Feb. 15, 1921	949,285	550,000	1,499,285	
Georgia & Florida	409	364	Oct. 19, 1929	7,446,000	13,382,441	21,868,441	Capital stock includes 100,000 shares common of no par value.
Georgia, Southwestern & Gulf	36	....	Jan. 2, 1933	76,800	14,700	91,500	
Albany & Northern	....	35	Jan. 2, 1933	400,000	350,000	750,000	
Jacksonville & Havana	60§	42	Feb. 1, 1930	300,000	160,810	460,810	

(*Table continued on page 47*)

Railroads shown hereon are those listed in Table VIII, on pages 45 and 46, plus a few small lines which have been operated by receivers

Map by courtesy of



Railroads Which Entered Receivership in Depression of the 'Nineties

Map by Courtesy of L. F. Loree.

Table VIII—Railroads in the Hands of Receivers or Trustees on December 31, 1935

(*Continued from page 45*)

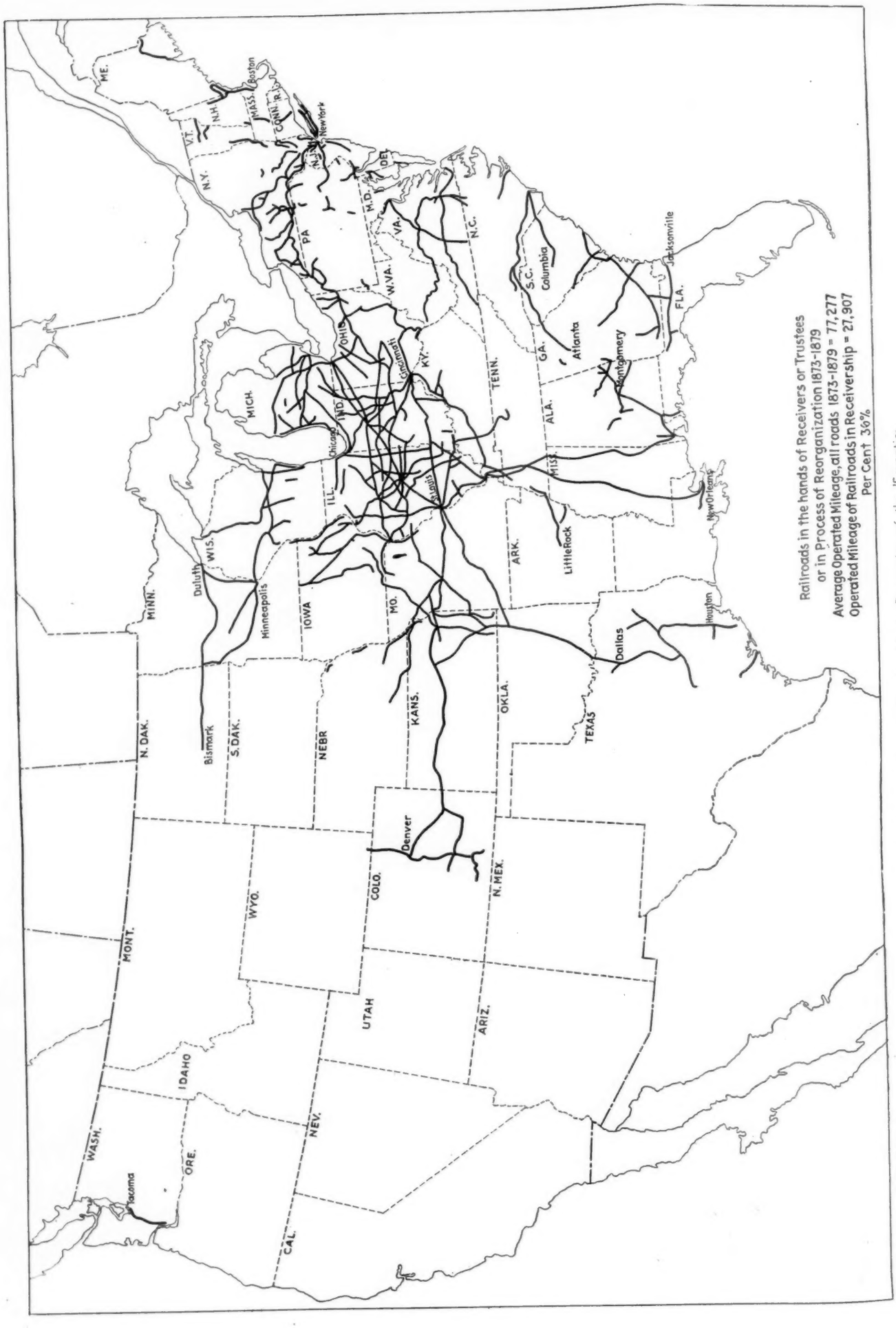
Road	Mileage operated	Mileage owned	Date of receivership or trusteeship	Funded debt outstanding	Capital stock outstanding	Total old company securities	Remarks
Kirby Lumber Company's Tram Roads..	70	70	Jan. 25, 1934		Data not available		
Louisiana & Northwest	99	93	Apr. 1, 1935	2,169,000	2,300,000	4,469,000	
Louisiana Southern	59	59	Aug. 2, 1933	1,000,000	100,000	1,100,000	
Meridian & Bigbee River	51	51	June 15, 1933	500,000	300,000	1,500,000	
Middleburgh & Schoharie	5	5	Feb. 1, 1935	18,000	88,500	106,500	
Minneapolis & St. Louis	1625	1526	July 26, 1923	43,366,051	25,792,600	71,121,443	
Missouri Pacific	7236	6332	July 1, 1933	385,232,000	154,639,600	551,767,600	
Missouri-Illinois	208	137	July 1, 1933	2,737,500	2,250,000	4,987,500	
Missouri Pacific R. R. Corp. in Nebr.	....	349	July 1, 1933	12,735,500	4,000,000	16,735,500	
New Orleans, Texas & Mexico	285	173	July 1, 1933	42,970,000	15,000,000	57,970,000	
Beaumont, Sour Lake & Western..	146	84	July 1, 1933	2,057,825	85,000	2,142,825	
Houston North Shore	....	27	July 1, 1933	850,000	100,000	950,000	
International-Great Northern	1155	1101	July 1, 1933	45,750,000	7,500,000	54,709,000	
St. Louis, Brownsville & Mexico...	598	552	July 1, 1933	12,913,342	500,000	14,561,342	
San Antonio, Uvalde & Gulf	317	314	July 1, 1933	4,413,000	280,000	4,693,000	
Mobile & Ohio	1202	913	June 3, 1932	31,023,000	6,007,200	41,566,299	
Neveda Copper Belt	41	41	Apr. 2, 1925	622,000	.....	622,000	
New York, New Haven & Hartford	2073	1315	Oct. 23, 1935	256,754,628	206,155,300	476,293,928	
Norfolk Southern	835	789	July 28, 1932	15,401,000	16,000,000	32,585,458	
Pittsburg, Shawmut & Northern	191	156	Aug. 1, 1905	14,655,600	15,000,000	31,700,020	
Pittsburgh & Susquehanna	18	18	Apr. 22, 1931	300,000	300,000	600,000	
Reader	22	22	1935	None	160,600	160,600	
Richmond Cedar Works Railroad	34	34	Dec. 23, 1931		Data not available		
Rio Grande Southern	174	174	Dec. 16, 1929	4,509,000	4,510,000	9,065,000	
Rutland, Toluca & Northern	21	21	Mar. 16, 1931	225,000	97,000	322,000	
St. Louis-San Francisco	4929	4772	Nov. 1, 1932	268,163,767	114,589,791	398,074,558	
St. Louis Southwestern	1083	754	Dec. 12, 1935	32,233,000	37,079,700	75,681,700	
Central Arkansas & Eastern	....	43	Dec. 17, 1935	1,085,000	150,000¶	1,235,000	
St. Louis Southwestern of Texas	696	667	Dec. 12, 1935	15,472,500	2,750,000¶	18,222,500	
Stephenville North & South Texas	....	33	Dec. 17, 1935	2,423,000	138,300¶	2,561,300	
Santa Fe, San Juan & Northern	....	32	Oct. 14, 1931	.....	500,057	.....	Other information not available.
Savannah & Atlanta	145	142	Mar. 4, 1921	3,365,870	2,250,000	6,115,870	
Seaboard Air Line	4308	3329‖	Dec. 23, 1930	151,779,270**	85,110,662	265,897,076	
Chesterfield & Lancaster	33	32	Apr. 14, 1931	253,000††	500,000	753,000	
East & West Coast	side track		Feb. 2, 1931	624,333	250,000	890,333	
Florida, Western & Northern	....	233	Feb. 2, 1931	14,999,000	5,000	15,169,000	
Georgia, Florida & Alabama‡‡	....	192	Nov. 7, 1931	1,750,000	2,010,678	4,260,678	Capital stock includes 10,000 shares common of no par value.
Raleigh & Charleston	20	20	May 1, 1931	550,000	574,500	1,124,500	
Seaboard-All Florida	....	184	Feb. 2, 1931	17,881,667	2,500	18,012,167	
Shelby Northwestern	22	22	Sept. 15, 1932	300,000	25,000	325,000	
Sierra Ry. Co. of California	119	59	May 5, 1932	1,747,000	3,248,000	4,995,000	
Spokane International	164	139	Aug. 28, 1933	4,200,000	4,200,000	8,400,000	
Coeur D'Alene & Pend D'Oreille	....	21	Aug. 30, 1933	544,000	544,000	1,088,000	
Tallulah Falls	57	57	June 24, 1923	1,519,000	323,400	1,842,400	
Tonopah & Goldfield	102	93	July 20, 1932	None	1,051,500	1,051,500	
Wabash	2447	2003§§	Dec. 1, 1931	122,408,526	138,120,767	293,142,087	
Ann Arbor	294	294	Dec. 4, 1931	9,164,541	7,250,000	17,014,541	
Waco, Beaumont, Trinity & Sabine	115	115	Feb. 8, 1930	330,000	1,113,000	1,529,202	
Western Pacific	1213	1158	Aug. 2, 1935	49,290,100	75,800,000	133,052,498	
Wichita Northwestern	99	99	Nov. 10, 1922	381,750	1,690,000	2,115,750	
Wilmington, Brunswick & Southern	35	35	Mar. 17, 1933	183,750	165,000	348,750	
Wisconsin Central	1119	1014	Dec. 2, 1932	44,803,000	27,392,200	72,195,200	
Yreka Western	8	8	Sept. 16, 1935	None	7,500	7,500	

* Includes $800,000 General Mortgage bonds held by the Akron, Canton & Youngstown.
† Includes $10,473,581.50 funded debt matured unpaid.
‡ Mileage owned consists of yard tracks and sidings.
§ Including trackage rights over C. B. & Q. between Jacksonville, Ill., and Waverly, 18 miles.
¶ Intercompany item.
‖ Includes 8.50 miles owned but not operated.
** Exclusive of pledged securities and inclusive of matured funded debt totaling $29,128,724, for the payment of which no provision has been made.
†† Inclusive of $67,000 principal amount of Second Mortgage 6 per cent bonds matured Jan. 15, 1918.
‡‡ Operated for Georgia, Florida & Alabama receivers by Seaboard Air Line receivers under court orders.
§§ Includes 6.83 miles owned but not operated.

Table IX—Summary of Railroad Receiverships and Foreclosure Sales, 1876 to 1935

	Roads Placed in Receivership			Summary of Foreclosure Sales				Roads Placed in Receivership			Summary of Foreclosure Sales		
Year	Number of roads	Miles	Bonds and stocks	Number of roads	Miles	Bonds and stocks	Year	Number of roads	Miles	Bonds and stocks	Number of roads	Miles	Bonds and stocks
1876...	42	6,662	$467,000,000	30	3,840	$217,848,000	1906...	6	204	$55,042,000	8	262	$10,400,000
1877...	38	3,637	220,294,000	54	3,875	198,984,000	1907...	7	317	13,585,000	6	114	13,777,000
1878...	27	2,320	92,385,000	48	3,906	311,631,000	1908...	24	8,009	596,359,000	3	138	2,547,000
1879...	12	1,102	39,367,000	65	4,909	243,288,000	1909...	5	859	78,095,000	12	2,629	250,033,000
1880...	13	885	140,265,000	31	3,775	263,882,000	1910...	7	735	51,427,500	17	1,100	93,660,109
1881...	5	110	3,742,000	29	2,617	137,923,000	1911...	5	2,606	210,606,882	13	1,386	40,741,543
1882...	12	912	39,074,000	16	867	65,426,000	1912...	13	3,784	182,112,497	12	661	25,910,990
1883...	11	1,990	108,470,000	18	1,354	47,100,000	1913...	17	9,020	477,780,820	6	1,159	86,163,850
1884...	37	11,038	714,755,000	15	710	23,504,000	1914...	22	4,222	199,571,446	9	1,470	83,189,500
1885...	44	8,836	385,460,000	22	3,156	278,394,000	1915...	12	20,143	1,070,808,628	11	3,914	285,258,782
1886...	13	1,799	70,346,000	45	7,687	374,109,000	1916...	9	4,439	208,159,689	26	8,355	703,444,855
1887...	9	1,046	90,318,000	31	5,478	328,181,000	1917...	19	2,486	61,169,962	20	10,963	557,846,348
1888...	22	3,270	186,814,000	19	1,596	64,555,000	1918...	8	3,519	242,090,800	11	763	24,735,187
1889...	22	3,803	99,664,000	25	2,930	137,815,000	1919...	7	244	11,886,779	8	459	15,479,587
1890...	26	2,963	105,007,000	29	3,825	182,495,000	1920...	10	541	21,620,150	7	380	7,676,200
1891...	26	2,159	84,479,000	21	3,223	169,069,000	1921...	14	1,744	63,872,113	11	4,173	306,123,942
1892...	36	10,508	357,692,000	28	1,922	95,898,000	1922...	12	4,330	329,114,860	15	6,151	299,491,646
1893...	74	29,340	1,781,046,000	25	1,613	79,924,000	1923...	10	2,218	87,913,581	8	637	14,622,900
1894...	38	7,025	395,791,000	42	5,643	318,999,000	1924...	11	920	30,223,372	14	3,992	269,251,082
1895...	31	4,089	369,075,000	52	12,831	761,791,000	1925...	6	11,368	680,422,080	6	638	9,965,000
1896...	34	5,441	275,597,000	58	13,730	1,150,377,000	1926...	6	88	2,821,400	12	12,852	626,662,708
1897...	18	1,537	92,909,000	42	6,675	517,680,000	1927...	6	924	45,236,674	5	142	4,254,000
1898...	18	2,069	138,701,000	47	6,054	252,910,000	1928...	1	19	529,000	4	209	6,393,250
1899...	10	1,019	52,285,000	32	4,294	267,534,000	1929...	3	634	30,981,391	5	562	20,715,065
1900...	16	1,165	78,234,000	24	3,477	190,374,000	1930...	4	4,752	277,323,994	2	1,048	124,668,500
1901...	4	73	1,627,000	17	1,139	85,808,000	1931...	19	5,195	432,151,526	2	102	993,860
1902...	5	278	5,835,000	20	693	39,788,000	1932...	13	11,817	626,577,314	8	394	8,575,178
1903...	9	229	18,823,000	13	555	15,885,000	1933...	18	21,222	1,229,678,183	2	298	16,133,000
1904...	8	744	36,069,000	13	524	28,266,000	1934...	1	81	460,000	2	40	1,598,600
1905...	10	3,593	176,321,000	6	679	20,307,000	1935...	16	29,018	2,182,979,167	5	436	9,146,800

Map by Courtesy of E. F. Baker



Railroads Which Entered Receivership in Depression of the 'Seventies

Map by Courtesy of L. F. Loree.

$74,327,446 had been repaid, leaving net indebtedness at $412,795,126. The net indebtedness at the end of 1934 stood at $376,555,435 and the increase during the eleven months of 1935 in net indebtedness to the Reconstruction Finance Corporation, therefore, was $36,239,691, which was $3,236,122 less than the increase in net indebtedness in 1934.

The Public Works Administration had in December alloted loans to railroads totaling $199,929,000, as compared with $195,626,000 at the end of 1934. Of this total, the amount actually advanced had in December reached a total of $188,591,500, of which $35,941,500 was paid out in 1935 and the balance in 1934. Of the railroad notes or other securities taken as evidence of these advances, $101,662,500 had been transferred to the Reconstruction Finance Corporation for sale to private investors, $84,000 had been repaid to the P. W. A. and $7,276,000 to the R. F. C. and notes and securities still held by the P. W. A. totaled $86,845,000. The R. F. C. has realized a substantial profit on some of these P. W. A. railroad securities it has sold. For example, $9,000,000 of Pennsylvania equipment trust certificates taken by the P. W. A. at par were sold to bankers at a premium of $76.55 per $1000 certificate. The R. F. C. has now asked for competitive bids on January 9 on $30,800,000 of Pennsylvania secured 4 per cent serial bonds, issued to the P. W. A. in connection with advances for electrification of the line between New York and Washington, D. C.

There has not been a single default in principal or interest on any of the P. W. A. railroad loans, although some of the roads are in the hands of trustees. In most cases the first interest came due during the year, as well as the first instalments on principal. The process of sales to the R. F. C. and eventually to the public is expected to continue until the bulk of the portfolio has been liquidated and when the Pennsylvania bonds are sold in January the total held by the public will be up to about $76,000,000.

The Railroad Credit Corporation on December 31 was to have made a distribution of $735,885 or 1 per cent to participating carriers. This brings the total of such distributions to $29,435,398, or 40 per cent of the fund administered by the Corporation. Of the amount returned to the participating railroads, $13,593,657 has been in cash and $15,841,741 in credits on indebtedness of the railroads to the Corporation. Among the railroads in bankruptcy which have reported indebtedness to the Railroad Credit Corporation in excess of $1,000,000 are the following:

Central of Georgia	$1,358,513
Chicago & Eastern Illinois	1,871,318
Chicago & North Western	1,409,635
Chicago Great Western	1,261,370
Chicago, Indianapolis & Louisville	1,660,201
Chicago, Milwaukee, St. Paul & Pacific	2,799,916
Missouri Pacific	3,329,124
New York, New Haven & Hartford	3,413,318
St. Louis-San Francisco	3,549,193
St. Louis Southwestern	1,627,675
Western Pacific	2,536,949

Table X—Receiverships and Trusteeships Established in 1935

Name of Road	Mileage	Funded Debt Outstanding	Capital Stock Outstanding
Chesapeake Beach	3	$998,000	$1,000,000
Chicago & North Western	8,428	305,797,000	180,869,503
Chicago Great Western	1,511	36,044,000	92,282,900
Chicago, Milwaukee, St. Paul & Pacific	11,123	449,384,184	224,483,213
Copper Range	170	2,280,000	2,000,000
Denver & Rio Grande Western	2,584	127,916,000	78,887,539
Louisiana & Northwest	99	2,169,000	2,300,000
Middleburgh & Schoharie	5	18,000	88,500
New York, New Haven & Hartford	2,073	256,754,628	206,155,300
Reader	22	None	160,600
St. Louis Southwestern	1,083	32,233,000	37,079,700
Central Arkansas & Eastern	....	1,085,000	150,000*
St. Louis Southwestern of Texas	696	15,472,500	2,750,000*
Stephenville North & South Texas	....	2,423,000	138,300*
Western Pacific	1,213	49,290,100	75,800,000
Yreka Western	8	None	7,500
Total sixteen companies	29,018	$1,281,864,412	$901,114,755

* Intercompany item.

Table XI—Foreclosure Sales in 1935

Name of Road	Mileage	Funded Debt Outstanding	Capital Stock Outstanding
Boyne City, Gaylord & Alpena	7	$800,000	$669,800
Missouri & North Arkansas	365	3,500,000	3,000,000
Ozark Southern	15	no information available	
Sandy River & Rangeley Lakes	43	837,000	340,000
Yreka	7	no information available	
Total five companies	437	$5,137,000	$4,009,800

Few Dividend Changes

There were few dividend changes of major importance during the year. Among several which may be mentioned are the declaration in December of $1 extra dividend on the common stock of the Pittsburgh & Lake Erie in addition to the regular semi-annual distribution of $1.25. The New York Central also benefited from a distribution of $3,000,000 by the Chicago River & Indiana. The Wheeling & Lake Erie in September made a disbursement of $8.75 per share on its 7 per cent cumulative prior lien stock, arrears of which totaled $43.75. The Alabama Great Southern in December failed to pay its customary dividend of $2 per share on its ordinary stock, approximately 60 per cent of which is held by the Southern.

Bad as the financial outlook and performance of the railroads have been, they have nevertheless improved greatly in recent months and even in recent weeks. Gross revenues of the railroads which had reported for November as this issue of the *Railway Age* went to press were almost 17 per cent ahead of November, 1934, and net railway operating income was more than 50 per cent better.

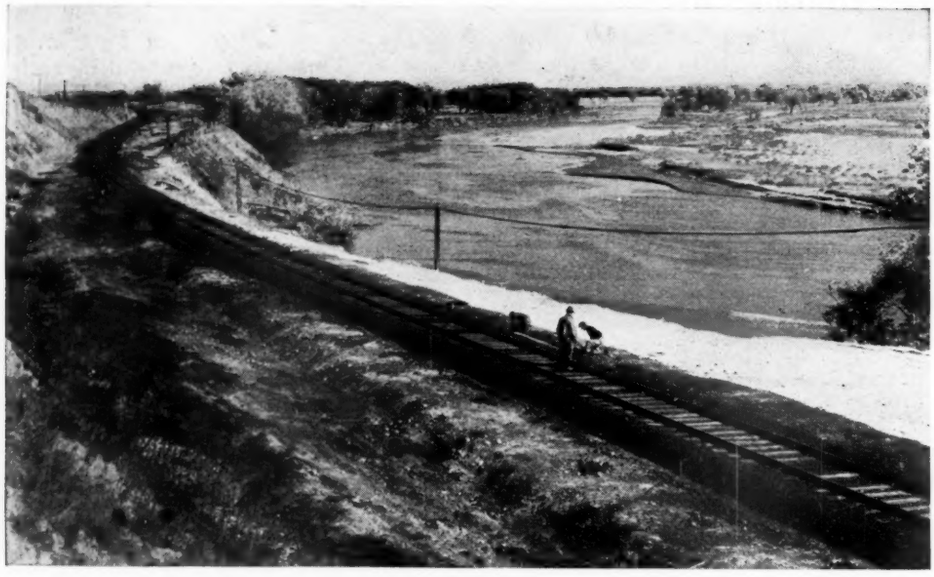
* * *

Courtesy O. V. B.

Along the Mountain Slopes of Austria

One of the numerous viaducts on the southern slope of the Tauern Mountains, on the way to the resort of Bad Gastein, 3350 ft. above sea level. There is a 17-mile grade of 2.8 per cent. 2-10-0 type steam locomotives with 51 in. and 57 in. drivers are used in both freight and passenger service, but electrification is in progress.

Railroads Which Entered Receivership in Depression of the Seventies
Map by Courtesy of L. F. Loree.



The Burlington Revised Its Line and Grades Along the Republican River in Nebraska

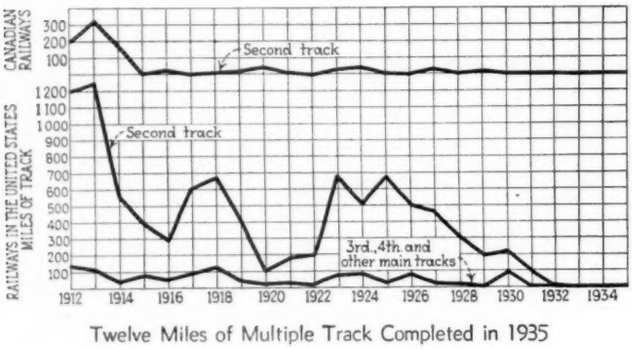
Railway Construction Still Recedes

New-line mileage dropped to 43, while other activities, except grade separations, showed further recession— Abandonments slightly less

By George E. Boyd
Associate Editor

CONTINUING the downward trend which first became apparent during 1931, railway construction more nearly approached a standstill during 1935 than at any previous time since these records were first compiled more than a third of a century ago. In fact, it is doubtful whether during their entire history, construction activities by the railways themselves have ever been at such low ebb. Following 1930, during which year railway construction on other than new lines reached an all-time high, new projects have not been started to offset those that have been completed year by year, with the result that both the number of projects under construction and the amount being spent for improvements and extensions have dwindled progressively, until at present they are approaching the vanishing point, and the carry-over into 1936 is the smallest on record.

While no class of work escaped the effect of this shrinkage in the volume of railway construction, grade-crossing eliminations were less affected than any other class, owing to the federal grants that have been made for highway grade separations through the NRA, PWA and WPA to various cities and state highway departments. In some cases the entire cost of these projects is borne by the grants; in others the railways are participating to the extent of 50 per cent; and in still others they bear only the expense of such track changes as are necessary to carry out the plans. As additional money is being allocated, it is to be expected that the number of grade separations will be greater in 1936 than in 1935.



Twelve Miles of Multiple Track Completed in 1935

Miles of Main Track Built in 1935

United States	Number of companies building	First track	Second track	Third track	Fourth track	Total
Alabama	1	4.35	...	...	...	4.35
California	2	6.22	2.15	...	...	8.37
Louisiana	1	8.27	8.27	...	...	16.54
Maryland	1	...	1.25	0.40	...	1.65
Nevada	1	0.33	...	...	...	0.33
Oregon	1	9.52	...	...	...	9.52
Tennessee	1	0.55	...	...	...	0.55
Utah	1	10.79	...	...	...	10.79
Washington	1	4.84	...	...	...	4.84
		44.87	11.67	0.40	...	56.94

Another partial exception to the general recession in construction activities has been the reconstruction and replacement of bridges, a considerable amount of work of this character, some of it of considerable magnitude, having been made possible through loans obtained from government agencies during 1934, or in a few cases in 1935. As many of these projects were carried over into

1935, this class of work has made a relatively better showing than others, except grade separations. Only a few of these projects remain to be carried over into 1936, however.

New Mileage Small

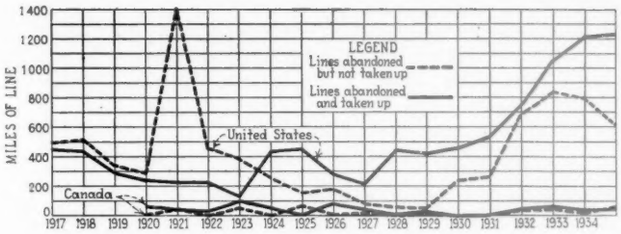
Analysis of the construction records over a long period shows that the mileage of new lines under construction or completed during any year provides an excellent index of railway construction activities as a whole. Confirming this relation, only 45 miles of new lines were completed during the year, a decrease of 31 miles as compared with 1934, and the second smallest mileage recorded for any year since the Civil War, the smallest having been 24 miles in 1933.

During the 20-year period prior to 1916, the mileage of new lines completed annually varied from 933 in 1915 to 6,026 in 1902, the latter being the largest mileage ever recorded for a single year. The average mileage completed year by year during these two decades was 3,765. During the 20-year period ending with 1935, the largest mileage completed was in 1916 when 1,098 miles were built and the smallest was the 24 miles completed in 1933. The average for this period was 565 miles a year. These figures point impressively to the fact that the days of large external development or extension of lines have passed and that future construction activities will be internal rather than external.

Miles of New Line Completed in the United States Since 1893

1893	3,024	1914	1,532
1894	1,760	1915	933
1895	1,420	1916	1,098
1896	1,692	1917	979
1897	2,109	1918	721
1898	3,265	1919	686
1899	4,569	1920	314
1900	4,894	1921	475
1901	5,368	1922	324
1902	6,026	1923	427
1903	5,652	1924	579
1904	3,832	1925	644
1905	4,388	1926	1,005
1906	5,623	1927	779
1907	5,212	1928	1,025
1908	3,214	1929	666
1909	3,748	1930	513
1910	4,122	1931	748
1911	3,066	1932	163
1912	2,997	1933	24
1913	3,071	1934	76
		1935	45

Of the 45 miles of new lines completed during the year, the longest single line was that of the Union Pacific between Iron Springs, Utah, and Iron Mountain to reach an extensive iron-ore deposit. The next longest was that of the Carlton & Coast, which was built in the form of a line revision 9.52 miles long between Cedar City, Ore., and Tillamook Gate, a low pass in the Coast range. The Public Belt of New Orleans placed 8.27 miles of new line in operation about the middle of December in connection with its new Mississippi river bridge which was dedicated on December 16. The Meridian & Bigbee River placed 4.35 miles of new line in service between Naheola, Ala., and Myrtlewood, thus completing its extension between Cromwell, Ala., and Myrtlewood, 20.79 miles, of which 16.44 miles were reported in 1934.



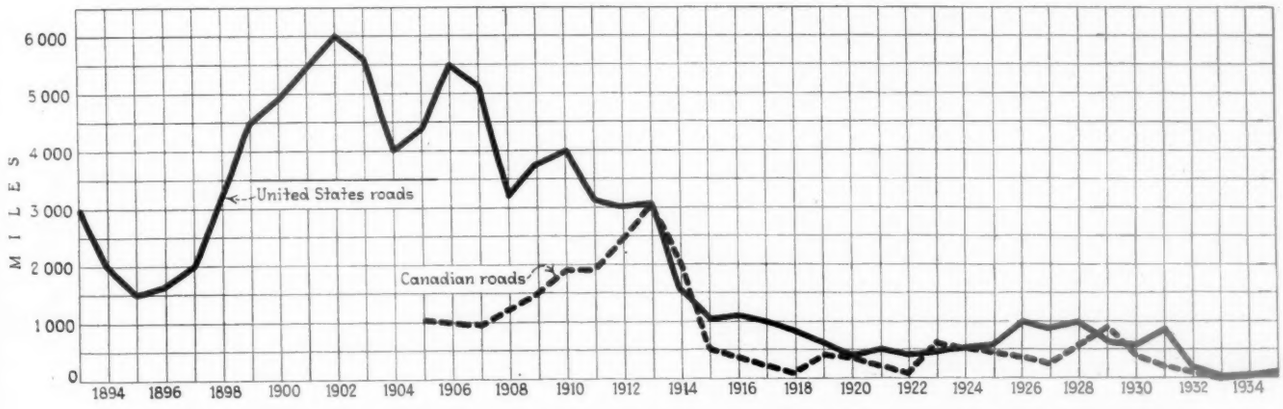
Abandonments in the United States Decreasd Slightly

Two of the new lines reported were connected with other projects, one of these being 6.22 miles as a part of the extensive grade separation and line relocation program which the Southern Pacific has had under way for several years at San Jose, Cal., to remove its main tracks from city streets and at the same time eliminate a number of troublesome grade crossings. The other was carried out by the Corps of Engineers, United States Army which constructed 4.84 miles of new line to bring the main line of the Spokane, Portland & Seattle above the backwater pool of the Bonneville Dam at Bonneville, Wash.

Miles of New Lines Completed in Canada Since 1904

1904	316	1920	305
1905	1,181	1921	252
1906	1,007	1922	145
1907	976	1923	655
1908	1,249	1924	615
1909	1,488	1925	414
1910	1,844	1926	335
1911	1,898	1927	310
1912	2,232	1928	723
1913	3,013	1929	841
1914	1,978	1930	385
1915	718	1931	250
1916	290	1932	121
1917	207	1933	0
1918	135	1934	1
1919	433	1935	2

At the close of the year, 52 miles of relocated lines were under construction by the Corps of Engineers for four roads in Eastern and Southern Ohio, in connection with the flood-control work which the army engineers are carrying out for the Muskingum Watershed Conservancy district. The roads involved are the Baltimore & Ohio, the Erie, the Pennsylvania and the Wheel-



New Lines Constructed in the United States Decreased to 45 Miles in 1935. Only Two Miles Completed in Canada

ing & Lake Erie. Likewise, the Corps of Engineers is building 12.34 miles of relocated line for the B. & O. between Grafton, W. Va., and Berryburg Junction, in connection with the flood-control dam across the Tygart river. Also at the close of the year the Norfolk & Western had 39.4 miles of new lines under construction, of which 15 miles is an extension southeasterly of a branch up Garden creek, and the remainder involves a new branch up the valley of Dismal creek both being in Buchanan County, Va.

Construction of new lines in Canada was at a complete standstill, no new lines having been completed during 1935; nor were there any under construction, the mileage of new main track shown in the tabulations having all been in connection with line revisions, as indicated in the detailed description of construction activities. This compares with 1 mile completed in 1934, no mileage in 1933 and 121 miles in 1932, and with 3,013 miles in 1913, the year of largest mileage since 1904, when the compilation of this record was started.

Miles of Lines Abandoned in the United States Since 1917

1917	942	1926	457
1918	959	1927	282
1919	637	1928	512
1920	536	1929	475
1921	1,626	1930	694
1922	677	1931	795
1923	513	1932	1,452
1924	693	1933	1,876
1925	606	1934	1,995
		1935	1,843

Multiple Track Mileage

Multiple-track mileage increased slightly during the year, as compared with 1934, when only 2.38 miles of second track and 1.41 miles of third track were built. Yet in keeping with the trend so noticeable in recent years, the total built in 1935 was negligible, 11.67 miles of second track and 0.40 mile of third track being all that was completed in 1935. This contrasts strongly with the more than 1,200 miles of second track completed in 1912 and as much as 600 and 700 miles a year in several later years. Likewise during the period since

Mileage Abandoned by States, 1933 to 1935, Inclusive

State	1933	1934	1935	Total
Alaska	18.27	....	....	18.27
Alabama	28.08	36.22	....	64.30
Arizona	126.51	15.49	17.04	159.04
Arkansas	37.85	51.28	42.35	131.48
California	185.65	116.00	70.57	372.22
Colorado	56.57	6.31	84.98	147.86
Connecticut	....	....	33.93	33.93
Florida	69.59	28.13	1.47	99.19
Georgia	46.56	126.63	12.34	185.53
Idaho	....	4.63	46.78	51.41
Illinois	38.30	160.82	13.90	213.02
Indiana	25.66	....	69.70	95.36
Iowa	79.51	52.44	83.32	215.27
Kansas	128.97	162.64	236.85	528.46
Kentucky	74.27	22.89	7.86	105.02
Louisiana	35.94	37.48	8.96	82.38
Maine	13.95	71.39	8.16	93.50
Maryland	....	....	25.60	25.60
Massachusetts	....	....	33.37	33.37
Michigan	51.05	71.39	166.20	288.64
Minnesota	12.94	53.37	50.93	117.24
Mississippi	33.50	85.57	....	119.07
Missouri	25.51	202.65	118.98	347.14
Montana	....	....	18.37	18.37
Nebraska	45.39	4.87	....	50.26
Nevada	....	26.27	0.31	26.58
New Hampshire	....	5.90	63.92	69.82
New Jersey	62.58	21.38	....	83.96
New Mexico	....	41.10	48.02	89.12
New York	4.14	30.82	30.58	65.54
North Carolina	53.10	18.50	10.00	81.60
Ohio	17.81	....	18.77	36.58
Oklahoma	9.24	79.01	....	88.25
Oregon	12.31	7.75	13.00	33.06
Pennsylvania	39.33	77.60	58.64	175.57
South Carolina	....	1.54	76.50	78.04
South Dakota	....	24.04	26.65	50.69
Tennessee	39.81	41.23	64.15	145.19
Texas	188.82	126.13	77.81	392.76
Utah	3.05	16.19	....	19.24
Vermont	33.22	....	....	33.22
Virginia	51.69	4.80	21.74	78.23
Washington	55.86	12.01	88.35	156.22
West Virginia	77.49	26.08	12.13	115.70
Wisconsin	93.14	124.45	39.65	257.24
Wyoming	....	....	41.07	41.07
	1,875.66	1,995.00	1,842.95	5,713.61

Lines Abandoned in the United States, Canada and Mexico in 1935

United States	Lines abandoned and taken up Miles	Lines abandoned but not yet taken up Miles
Atchison, Topeka & Santa Fe		
Elsinore, Cal., to Temecula	15.43	
Dillon, N. M., to Des Moines	44.88	
Carisbrooke, N. M. to Yankee	3.14	
Abilene, Kan., to Solomon	10.07	
Appalachian		
Ela, N. C. to Ravensford		10.00
Baltimore & Ohio		
Wellston, Ohio, to Superior Mine No. 10	0.60	
Portsmouth brauch, Wellston, Ohio	2.10	
Middletown branch, Hamilton, Ohio	3.60	
Beaver Dam branch, Midvale, Ohio	0.80	
Hickman Run branch, Hickman Run Junction, Pa.	1.80	
Niver branch, Macdonaldton, Pa.	1.70	
(Bellington & Northern) Bellington, W. Va.	2.80	
Hocking extension, Grassy Run, Pa.		0.20
Bangor & Aroostook		
Brownville Junction, Me., to Katahdin Iron Works	7.63	
Bartlett Western		
Bartlett, Tex., to Florence		23.20
Boston & Albany		
Bondsville, Mass., to Athol	28.49	
Boston & Maine		
At Wolfeboro Station, N. H.	0.07	
At Medford Junction, N. H.	0.05	
Parkers, N. H., to New Boston	5.16	
Near Dover, N. H.	0.31	
Hudson, N. H., to Fremont	20.59	
Lily Pond, N. H., to Bridge 265	15.25	
Elmwood, N. H., to Keene		21.85
Alton, N. H., to Bridge 265		0.64
Boyne City		
Boyne Falls, Mich., to Alpena	84.00	
Burlington-Rock Island		
Hubbard, Tex., to Hillsboro	25.00	
Carlton & Coast		
Cedar Creek Junction, Ore., to Tillamook Gate		13.00
Chesapeake & Ohio		
Guthrie, Va., to Alberene	3.91	
Poplar, Ky., to Carter	4.07	
Chesapeake Beach		
Seat Pleasant, Md., to Chesapeake Beach	25.60	
Chicago & North Western		
Spring street, Chicago, to Mill street	0.24	
Clowry, Mich., to Republic		12.01
What Cheer, Iowa, to Consol		52.58
Mission Hill, S. D., to Yanktown		5.19
Chicago, Burlington & Quincy		
Hamilton, Iowa, to Tracy		8.34
Lewiston, Ill., to West Havana		9.20
Chicago Great Western		
Planks, Minn., to Utica	13.47	
Chicago, Indianapolis & Louisville		
McCoysburg, Ind., to Dinwiddie		35.95
Avoca, Ind., to Switz City		33.75
Chicago, Milwaukee, St. Paul & Pacific		
Hastings, Minn., to Farmington	17.67	
Doering, Wis., to Kalinke	14.90	
Babcock, Wis., to Norway	15.84	
Chehalis, Wash., to Dryad		18.55
Colton, S. D., to Madison		16.28
Chicago, Rock Island & Pacific		
Solomon, Kan., to Salina	10.03	
Preemption, Ill., to Sherrard		4.46
Chicago, St. Paul, Minneapolis & Omaha		
Stillwater Junction, Minn., to Stillwater	2.29	
Elmwood, Wis., to Weston	8.91	
Denver & Rio Grande Western		
Pagosa Junction, Colo., to Pagosa Springs		30.85
Denver & Salt Lake		
East Portal, Colo., to Irvings, (via Corona)		30.73
Erie		
Ringwood Junction, N. Y., to Sterling Forest	8.58	
East Lake Junction, Pa., to Lake Ariel	0.71	
Escanaba & Lake Superior		
Various branches, Wells, Mich., to Channing	12.50	
Florida East Coast		
West Palm Beach, Fla., to Palm Beach		1.47
Great Northern		
Longview, Wash., to Vader Junction	19.13	
Violin, S. D., to Mission Hill		5.18
Curlew, Wash., to International boundary, Midway, B. C.		14.52
International boundary, Midway, B. C., to International boundary, Molson, Wash.		28.90
Molson, Wash., to end of line		2.41

Lines Abandoned in the United States, Canada and Mexico in 1935—Continued

United States	Lines abandoned and taken up Miles	Lines abandoned but not yet taken up Miles
Hill City		
Hill City, Minn., to Mississippi Junction	17.50	
Intermountain		
Steirman, Idaho, to Barber Junction	26.14	
Kansas & Oklahoma		
State Line, Kan., to Woods		19.00
Lehigh & New England		
State Junction, Pa., to Slatington	6.21	
Lehigh Valley		
Spencer, N. Y., to East Ithaca	22.00	
Slatedale, Pa., to Saegersville	0.88	
Beaver Meadow, Pa., to Hazel Creek Junction		3.56
Louisville & Nashville		
Heidelberg, Ky., to Idamay	2.98	
Vernalis, Ky., to Consolidation Mines	0.81	
Ludington & Northern		
Ludington, Mich., to North Epworth		4.50
Maine Central		
Woodland Junction, Me., to Princeton	0.53	
Michigan Central		
Battle Creek, Mich., to Sturgis	33.80	
Sturgis, Mich., to Findley	6.60	
Minneapolis & St. Louis		
Martinsburg, Iowa, to Brighton	22.40	
Missouri Pacific		
Lake City, Mo., to Masso Spur	5.54	
Nashville, Chattanooga & St. Louis		
Harsh Switch, Tenn., to Lebanon	26.96	
DeRossett, Tenn., to Clifty	7.67	
New York Central		
Franklin, Pa., to Belmar	4.14	
Ferro, Ohio, to Cannellville	5.52	
North Corning, Ohio, to Drakes	2.76	
Saltillo, Ohio, to end of Redfield branch	2.20	
Boomer, W. Va., to end of Boomer branch	1.70	
Sturgis, Mich., to Findley		6.60
New York, New Haven & Hartford		
East Hartford, Conn., to Putnam	33.93	
Bellingham Junction, Mass., to Woonsocket, R. I.	4.88	
Norfolk & Western		
Cooper, W. Va., to Krag	0.63	
Ivanhoe, Va., to Speedwell		16.45
Norma branch, Cripple Creek, Va.		1.38
North & South		
Salt Creek, Wyo., to Illco	41.07	
Northern Pacific		
St. Regis, Mont., to Haugan	18.37	
Northwestern Pacific		
Fulton, Cal., to Duncan Mills		23.23
Northwestern of South Carolina		
Wilson's Mill, S. C., to Millard Junction		17.00
St. Paul, S. C., to Sumpter		24.50
Sumpter, S. C., to Southern Junction		24.50
At Camden, S. C.		0.50
Manville Junction, S. C., to Rose Hill		10.00
Oregon-Washington Railroad & Navigation		
Enaville, Idaho, to Prichard	20.64	
Pennsylvania		
Crissman branch, Pa.	0.31	
Schoonmaker branch, Pa.	0.50	
At Cecil, Pa.	1.87	
Mahoning branch, Pa.	1.08	
Tungascootac branch, Pa.		5.88
Amesville branch, Pa.		1.33
Graham branch, Pa.		1.14
Vulcan branch, Pa.		2.07
Moshannon branch, Pa.		0.25
Smoke Run Branch, Pa.		0.52
Osceola branch, Pa.		0.55
Massillon branch, Ohio		1.19
Pere Marquette		
Freeport, Mich., to Elmdale	6.19	
Port Bolivar Iron Ore		
Longview, Tex., to Ero	29.61	
Reading		
At St. Nicholas, Pa.	0.32	
Rowlesburg & Southern		
Rowlesburg, W. Va., to Erwins	7.00	
St. Louis-San Francisco		
Bono Junction, Ark., to Algoa	35.75	
Osprey, Ark., to McDougal	6.60	
Belton, Mo., to Clinton, and Tracy Junction, Mo., to Phenix	104.47	
Wardwell, Mo., to Yukon	8.97	
Shearwood		
Claxton, Ga., to Nevills		12.34
Sierra Railway of California		
Jamestown, Cal., to Angels	19.30	
Silverton Northern		
Silverton, Colo., to Animas Forks		14.10
Howardsville, Colo., to Green Mountain		2.00
Silverton, Colo., to Gladstone		7.30
Southern Pacific		
Clavicle, Cal., to Springville	2.40	
West Chandler, Ariz., to Maricopa	17.04	
Miraflores, Cal., to West Anaheim Junction	2.16	
Santa Clara, Cal., to Lick	1.41	4.71
Eunice, La., to Mamou	8.96	
Spokane, Portland & Seattle		
M. P. 45.58 to M. P. 50.52, North Bonneville, Wash.	4.84	
Tennessee & Carolina Southern		
Maryville, Tenn., to Calderwood	29.52	
Tionesta Valley		
Sheffield Junction, Pa., to Hallton		16.68
Sheffield, Pa., to Clarendon		6.94
Union Pacific		
Knox, Kan., to Clay Center	143.53	
Clay Center, Kan., to Concordia	37.07	
Lawrenceburg, Kan., to Belleville	17.15	
Ventura County		
Patterson Ranch, Cal., to McGrath	1.93	
Virginia & Truckee		
At Gold Hill, Nev.		0.31
Total	1,235.16	607.79
Canada		
Canadian National		
Tweed, Ont., to Bannockburn	18.49	
At Shere, B. C.	0.75	
M. P. 1.38 to Patricia Bay, B. C.	14.15	
Sidney Junction, B. C., to Sidney	1.67	
At Montreal South, P. Q. (M. & S. C.)	0.66	
Iberville, P. Q., to Ste. Hyacinthe		28.10
Trenton, Ont., to Brighton		7.75
Brant County Siding, Ont., to Paris Junction		5.35
Simcoe Junction, Ont., to Otterville		14.05
Foothills, Alta., to Lovett		3.98
Lovett, Alta., to end of track		1.96
Great Northern		
Colebrook, B. C., to Ladner		10.20
Pacific Great Eastern		
M. P. 318.82 to M. P. 319.29, B. C.	0.47	
M. P. 326.72 to M. P. 327.41, B. C.		0.69
Temiskaming & Northern Ontario		
Lorrain Junction, Ont., to Silver Center	17.07	
Total	53.26	72.08
Mexico		
Mexican Pacific		
Bambas Junction, Sinaloa, to Bambas	1.90	
Aguila, Sianloa, to Florida	2.00	
Total	3.90	

1912, the mileage of third and fourth tracks equalled or exceeded 100 miles in each of seven years.

Of the 11.67 miles of second track completed in 1935, 8.27 miles were built by the New Orleans Public Belt in connection with its new bridge across the Mississippi river at New Orleans, La. The Southern Pacific completed 2.15 miles in connection with its line diversion at San Jose, Cal., and the Pennsylvania reported 1.25 miles as a part of its Baltimore, Md., improvment, which project also accounted for the 0.40 mile of third track.

Among the larger projects completed or still under way at the close of the year, the Pennsylvania continued its terminal-improvement program at Philadelphia, Pa., and its track elevation at Newark, N. J. It completed the electrification of its passenger and freight lines between New York and Washington, D. C., and of its six freight branches in the New Jersey terminal area. It also completed the extensive line and grade revision which has been under way for some time at Elkton, Md. Including these major projects, the Pennsylvania has been carrying out a construction program involving a total expenditure of approximately $200,000,000.

Although, relatively, the $175,000,000 West Side improvements which the New York Central has been constructing for several years are nearing completion, actually a considerable amount of work remains to be done, much of which must be carried out on a schedule of consecutive items, and this is being pushed with vigor. The line diversion for the purpose of removing its passenger tracks from the street through the business district of Syracuse, N. Y., as well as to abolish numerous busy grade crossings, was brought nearer completion, only 25 per cent of this extensive project remaining uncompleted at the end of the year.

In Mexico, there has been a small revival of new-line construction to care for certain badly needed trans-

portation and communication facilities. The most important of these is the plan to build a line from Sarabia, Oaxaca, to Campeche, Campeche, about 500 miles, to provide an outlet for the now remote and isolated southeastern states. A line revision, 7.5 miles long, to provide a better crossing of the San Pedro river at Meoqui, and eliminate damage from floods was completed during the year, except the bridge across the river.

Mileage Abandoned Declines Slightly

In strong contrast with the almost complete stagnation of construction of new lines and of other construction activities by the railways, 1,843 miles of lines were abandoned during the year. While this does not equal the record of 1,995 miles abandoned in 1934, it compares with 1,876 miles abandoned in 1933, with 1,452 in 1932 and with 1,626 in 1921, the only years in which more than 1,000 miles were abandoned. The total of the abandonments for the year is thus 1,798 miles greater than the mileage of new lines completed during the year. The largest single abandonment during the year was that of the Union Pacific between Knox, Kan., and Clay Center, 144 miles. The St. Louis-San Francisco came next with 104 miles from Belton, Mo., and Clinton, via Tracy Junction to Phenix. The Boyne City, which purchased the old Boyne City, Gaylord & Alpena, abandoned 84 miles of the latter road and thus stands third on the list of single abandonments. The North & South, involving the abandonment of 41 miles, stands first in the list of abandonments of entire railways. The Port Bolivar Iron Ore is next in this list with 30 miles abandoned, and the Intermountain is third with 26 miles.

Abandonments were not recorded prior to 1917, although a few lines, principally logging roads or those serving mines, had been discontinued from time to time, for the reason that the lines involved were unimportant and had served the purpose for which they had been built, while these abandonments occurred only occasionally and were not on a scale to attract attention. In 1917, however, 942 miles were abandoned and this movement has continued to the present. Although the record of that year was not equalled, except in 1921 when 1,626 miles were abandoned, until 1933 when 1,452 miles were abandoned, this was increased to 1,876 miles in 1933 and to 1,995 in 1934. Since 1917, a total of 17,549 miles of line have been abandoned, while during the same period 10,193 miles of new lines have been constructed, leaving a net decrease for the period of 7,356 miles of main lines.

Of equal interest with the mileage abandoned by individual roads and the total for all roads, is the distribution of these abandonments, by states, for the states themselves are vitally concerned. During the three years ending with 1935, a total of 5,714 miles of lines were abandoned in 45 states and Alaska, the only states in which no abandonments occurred during these years being Delaware, North Dakota and Rhode Island.

For the three years ending with 1935, Kansas heads the list, with 528 miles abandoned; Texas is second, with 393 miles of lines abandoned; California is third, with abandonments aggregating 347 miles; while the 289 miles abandoned in Michigan places this state in fourth place. By regions the abandonments have been, for the three years in question, New England states, 264 miles; North Atlantic states, 325 miles; Southeastern states, 1,098 miles; Middle Western states, 1,223 miles; Western states, 630 miles; Southwestern states, 1,042 miles; and the Rocky Mountain Pacific states, 1,114 miles.

Prior to 1932, the abandonments in both Canada and Mexico had been negligible. In 1932 and 1933, however, the Canadian roads abandoned a total of 282 miles. During 1934, there was a still further abandonment of 55 miles and in 1935, these figures were increased by 125 miles. No abandonments were recorded for Mexican roads in 1934, although operation was suspended on several small roads serving mining properties. With the revival of interest in silver mining, some of these have resumed operation, however. The only abandonments in 1935 were two short branches of the Mexican Pacific aggregating 4 miles.

Following is a detailed report by roads of construction projects completed or under way during 1935, the individual cost of which approximates or exceeds $100,000, including various items for which allocations were made by the NRA, PWA and WPA.

Railway Construction in the United States

Alaska Railroad

Important Work Undertaken: Reconstruction of approaches to bridge over Gold creek (completed). Construction of section house, warehouse and car repair shed at Berg and Anchorage (75 per cent completed). Line diversion between M.P. 71.2 and M.P. 71.4 (90 per cent completed—work suspended temporarily). Track elevation and extension of embankments, Matanuska to Palmer, 6.5 miles (completed). (Entire improvement program, $250,000.)

Atchison, Topeka & Santa Fe

Important Work Undertaken: Change of line and construction of new bridge over Illinois and Michigan canal, Joliet, Ill. (completed). Drainage of track and roadbed, Ottawa Junction, Kan., to Pomona (completed). Construction of four truss spans over South Canadian river, Nobscot, Okla. (completed). Track elevation to raise grade and installation of bank protection, at Rio Salado, San Acacia, N. M. (completed). Raise of grade and placing riprap protection along Rio Grande, La Joya, N. M. (completed). Revision of alinement, Domingo, N. M., to Elota (completed). Construction of New Bright Angel hotel, Grand Canyon, Ariz. (completed). Rehabilitation of ice house, Calwa, Cal. (completed). Construction of new freight house, Oakland, Cal. (completed). Revision of line, Isleta, N. M., to Sandia (completed).

Baltimore & Ohio

New Line Under Construction: Grafton, W. Va., to Berryburg Junction, 12.34 miles, in connection with dam across Tygart river, $4,384,000 (5 per cent completed).

Important Work Undertaken: Elimination of grade crossing, LeRoy, N. Y., $254,000 (90 per cent completed). Elimination of grade crossing, Mumford, N. Y., $193,700 (60 per cent completed). Grade separation, Peth (Great Valley), N. Y., $170,200 (30 per cent completed). Connection between B. & O. and P. & L. E., West Pittsburgh (New Castle Junction), Pa., $193,000 (completed). Construction of viaduct, Halsted street, Riverdale, Ill., $300,000 (completed). Reconstruction of Bridge 240-9, Gary, Ind., $133,000 (completed). Grade separation by means of subway, Ashland avenue, Riverdale, Ill., $200,000 (completed).

(Staten Island Rapid Transit). Elimination of grade crossings, Grasmere, Staten Island, N. Y., to Dongan Hills, $1,500,000 (completed). Elimination of grade crossings, Elm Park, S. I., N. Y., to Mariners Harbor, $1,824,000 (30 per cent completed). Elimination of grade crossings, Port Richmond, S. I., N. Y., to Tower Hill, $1,724,000 (40 per cent completed). Elimination of grade crossings, Tompkinsville, S. I., N. Y., to Stapleton, $1,524,000 (20 per cent completed). Elimination of grade crossings, Ft. Wadsworth, S. I., N. Y., $942,000 (55 per cent completed).

Relocation of 5.25 miles of line, Beach City, Ohio, in connection with the Beach City reservoir, Muskingum Conservancy District, $332,000 (25 per cent completed). Relocation of 2.2 miles of line, Mineral City, Ohio, in connection with construction of the Dover reservoir, Muskingum Conservancy District (50 per cent completed). Relocation of 5.85 miles of line, East Sparta, Ohio, in connection with the construction of the Bolivar reservoir, Muskingum Conservancy District, $450,000 (started). These three projects are being carried out by the Corps of Engineers, United States Army.

Boston & Maine

Important Work Undertaken: Elimination of grade crossing, Main street, Waltham, Mass., $280,000 (5 per cent completed). Grade separation, State street, Newbury, Mass., $380,000 (5 per cent completed).

Canadian National (Lines in U. S.)

Important Work Undertaken: Reconstruction of freight car shop destroyed by fire, Port Huron, Mich. (completed). Track facilities at Chevrolet plant, Flint, Mich. (to be completed in 1936).

Carlton & Coast

First Track: Cedar Creek cutoff, Cedar Creek, Ore., 9.52 miles, $300,000.

Central of New Jersey

Important Work Undertaken: Widening underpass for state route No. 21, Ward street, Newark, N. J., $213,000 (50 per cent completed). Construction of underpass, state highway No. 31, Cornell boulevard, Raritan, N. J., $139,000 (80 per cent completed).

Chesapeake & Ohio

Important Work Undertaken: Enlargement of Mason's tunnel, Millboro, Va., $108,200 (completed). Addition and improvements to company hospital, Clifton Forge, Va., $123,000 (85 per cent completed). Enlargement to and lining of old Lewis tunnel, Jerry's Run, Va., $305,000 (98.5 per cent completed). Extension to Alleghany westbound passing siding and incidental rearrangement of signals and interlocking, Jerry's Run, Va., to White Sulphur, W. Va., $133,115 (completed).

Filling Bridges 6017 and 6018, Maysville, Ky., $119,400 (completed). Enlargement and lining of part of Needles Eye tunnel and making open cut of remainder, Aden, Ky., $151,000 (completed). Additional coal dumper and yard, Presque Isle, Toledo, Ohio, $1,550,500 (completed). Lowering track through old Big Bend tunnel, Talcott, W. Va., $262,000 (completed). Line revision through The Narrows, Chillicothe, Ohio, $260,000 (completed). Construction of 13 additional tracks in yard, Presque Isle, Toledo, Ohio, $151,350 (completed).

Chicago & North Western

Important Work Undertaken: Construction of overhead highway bridge, Caledonia, Ill. (completed). Construction of concrete and I-beam underpass, County Line Highway, West Allis, Wis. (completed). Reconstruction of subway over highway, Owatonna, Minn. (completed). Reconstruction of steel subway on concrete piers, Mihill road, Fond du Lac, Wis. (completed). Construction of subway, Route 57, Niles Center, Ill. (completed). New overhead highway bridge, Tilford, S. D. (80 per cent completed). New overhead concrete bridge, Deadwood, S. D. (25 per cent completed). New double-track underpass, U. S. highway No. 2, Spaulding, Mich. (95 per cent completed). New overhead concrete highway bridge, Irving, Iowa (started). Construction of three deck-plate girder spans, north approach to bridge over Illinois river, South Pekin, Ill. (50 per cent completed). Construction of three deck-girder spans, south approach to Illinois River bridge, South Pekin, Ill. (5 per cent completed).

Chicago, Burlington & Quincy

Important Work Undertaken: Revision of alinement and grade and enlargement of drainage openings in flood territory along Republican river and tributaries in Nebraska and Colorado, $800,000 (80 per cent completed).

Chicago, Milwaukee, St. Paul & Pacific

Important Work Undertaken: Grade separation, Waukegan road, Glenview, Ill. (WPA project), $188,000 (43 per cent completed). Construction of bridge across north branch of Chicago river and Deering branch of railway, Ashland avenue, federal grant project, $1,290,500 (80 per cent completed).

Chicago, Rock Island & Pacific

Important Work Undertaken: Revision of alinement between Bridgeport, Tex., and Vineyard, 9.46 miles. Grade separation, Twenty-fifth street, Little Rock, Ark., PWA project, $126,780 (completed). Grade separation, Hillsboro street, El Dorado, Ark., PWA project, $127,461 (completed). Overhead highway bridge, Route 15, North Ft. Worth, Tex., PWA project, $158,015 (completed). Grade-separation underpass, Cicero avenue, Oak Forest, Ill., PWA project, $106,000 (completed). Reconstruction of Twenty-Second Street subway, Chicago, PWA project, $350,000 (5 per cent completed).

Delaware & Hudson

Important Work Undertaken: Reconstruction of northbound spans and part of pier, Bridge 102.26, Sidney, N. Y., $110,000 (completed). Grade separation, Esperance, N. Y. (90 per cent completed). Elimination of grade crossing, Windsor, N. Y., $290,588 (80 per cent completed). Elimination of State and Sciota roads, Chazy, N. Y., $200,882 (completed). Elimination of Windsor road, Rouses Point, N. Y., $100,674 (completed).

Delaware, Lackawanna & Western

Important Work Undertaken: Elimination of grade crossings at Lackawanna avenue, Hulett street, Brown road and county highway No. 358, including two miles of new highway, towns of Horseheads and Big Flats, Horseheads, N. Y. (completed). Reconstruction of overhead bridge over Erie and D. L. & W. and construction of 0.35 mile of bituminous highway, joint with Erie, Big Flats, N. Y. (completed).

Denver & Salt Lake

Important Work Undertaken: Line revision to reduce curvature 422 deg., between Parshall, Colo., and Troublesome, $146,000 (30 per cent completed). Lining Moffat tunnel with reinforced concrete, East Portal, Colo., to West Portal, $1,100,000 (96 per cent completed). Construction of or extension to 12 passing sidings, 26,098 ft. of siding, various points, $100,266 (completed). Replacing timber trestles with culverts and filling, extending embankments and installing new ballast, $146,206 (completed).

Erie

Important Work Undertaken: Elimination of grade crossing by means of bridge over Erie and N. Y. C., Willow avenue, Weehawken, N. J. (completed). Elimination of grade crossings, state routes No. 23 and No. 6, by track elevation and underpasses, Singac, N. J. (completed). Reconstruction of four-track bridge to improve alinement of state highway No. 115, Harriman, N. Y. (completed). Reconstruction of bridge No. 134.91, over Callicoon creek, Callicoon, N. Y. (completed). Elimination of Nanticoke avenue by three-track underpass and of Liberty avenue by closing, Endicott, N. Y. (completed). Track elevation to eliminate grade crossings with 15 city streets, including new double-track bridge across Chemung river, Elmira, N. Y. (completed).

Elimination of grade crossing with state highway No. 1378 by means of overhead bridge, Horseheads, N. Y. (completed). Reconstruction of highway bridge to improve alinement of county highway No. 358, Big Flats, N. Y. (completed). Construction of eight-track bridge to eliminate grade crossings at William and South Ogden streets, Buffalo, N. Y. (75 per cent completed). Grade separation, Southwestern boulevard, Big Tree, N. Y. (completed). Grade separation, Buffalo-Hamburg highway, Big Tree, N. Y. (completed). Overhead bridge over Erie and Pennsylvania, to eliminate grade crossing, College avenue, Allegany, N. Y. (completed). Relocation of 2.65 miles of line in connection with the Charles Mills dam, Muskingum Conservancy District, Pavonia, Ohio, $168,300 (50 per cent completed). This latter project is being carried out by the Corps of Engineers, United States Army.

Florida East Coast

Important Work Undertaken: Construction by state of overhead bridge to eliminate highway grade crossing, Titusville, Fla., $200,000 (completed).

Illinois Central

Important Work Undertaken: Construction of new dock wall, 1,125 ft. long, along south side of Chicago river, in connection with Wacker Drive viaduct, Field boulevard to Outer Drive bridge, Chicago, $230,000 (60 per cent completed). Renewal of north approach to Cairo bridge, Cairo, Ill., $165,000 (completed). Construction of double-track trestle over Bonnet Carre spillway, La Branch, La., $2,750,000 (completed). Construction of single-track trestle over Bonnet Carre spillway, Sellers, La., $875,000 (completed).

Kansas City Southern

Important Work Undertaken: Reinforced concrete headhouse and grain drier, with connections to existing storage, Kansas City Southern elevator, Kansas City, Mo., $240,000 (completed).

Lehigh Valley

Important Work Undertaken: Construction of overhead bridges and approaches to eliminate grade crossing, Central avenue, Picton, N. J. (completed). Grade separation, Park avenue, Oak Tree, N. J. (completed). Construction of underpass to eliminate grade crossings at Ogden and William streets, Buffalo, N. Y. (90 per cent completed).

Louisiana & Arkansas

Important Work Undertaken: Construction of floodway trestle over Bonnet Carre spillway, Narco, La., $1,000,000 (completed).

Louisville & Nashville

Important Work Undertaken: Viaduct over tracks of L. & N., Southern and St. L.-S. F., Ninth avenue, Bessemer, Ala., state highway project, $200,000 (completed). Viaduct over tracks of L. & N. and A. C. L., Day street, Montgomery, Ala., state highway project, $157,816 (completed). Underpass under tracks of L. & N. and C. & O., Monmouth street, Newport, Ky., state highway project, $344,540 (completed). Viaduct to eliminate grade crossing with Cynthiana-Falmouth road, Cynthiana, Ky., state highway project, $146,000 (completed).

Meridian & Bigbee River

First Track: Naheola, Ala., to Myrtlewood, 4.35 miles.

Important Work Undertaken: Extending embankments, applying ballast and general rehabilitation, Meridian, Miss., to Cromwell, Ala., 30 miles, $250,000 (started).

Minnesota Transfer

Important Work Undertaken: Elimination of overhead bridge and construction of underpass, University avenue, St. Paul, Minn., $600,000, PWA project, railway share, $50,000, utility companies, $100,000, PWA, $450,000 (completed).

Missouri Pacific

Important Work Undertaken: Reconstruction of 1,890 ft. of south approach, Bridge 83, Benzal, Ark., $182,000 (90 per cent completed). Reconstruction of north approach, Bridge 83, Benzal, Ark., $145,000 (65 per cent completed). Construction of concrete culvert and filling Bridge 143, Myrtle, Ark., $139,000 (completed). Rebuild Bridge 69 on new alinement and grade, Osawatomie, Kan., $144,000 (70 per cent completed). Rebuild portion of approaches, Bridge 223, Corning, Ark., $103,900 (completed). Rebuilding north approach, Bridge 131, Rochelle, La., $100,000 (completed).

New Orleans Public Belt

First Track: Over new Mississippi river bridge and approaches, 8.27 miles.

Second Track: Over Mississippi river bridge and approaches, 8.27 miles.

Important Work Undertaken: Construction of combined highway and doubletrack railway bridge over Mississippi river, New Orleans, La., $12,800,000 (completed). Trackage and connections with various railways to give access to Mississippi river bridge, exclusive of track on bridges and approaches, New Orleans, La., and Avondale (completed).

New York Central

Important Work Undertaken: Relocation of city sewers from West Thirty-Third street to West Fifty-Ninth street, New York, $898,000 (98 per cent completed). Superstructure, express highway, city structure No. 4, from West Seventy-Second street to West Seventy-Sixth street, New York, $1,500,000—city bears cost (90 per cent completed). Track depression to eliminate grade crossings, West Thirty-Fourth street and Eleventh avenue to West Sixty-Fourth street, New York, $5,000,000 (28 per cent completed).

Track changes and incidental signal changes, Ossining, N. Y., to Oscawanna, $900,000 (40 per cent completed). Elimination of grade crossing, West 171st street, High Bridge, N. Y., $195,000 (80 per cent completed). Elimination of grade crossing, Willow avenue, Hoboken, N. J., joint with Erie, $410,000 (completed). Reconstruction of Bridge 364, West Albany, N. Y., $300,000 (completed). Grade separation, Schuyler street, Utica, N. Y., $299,400 (90 per cent completed). Line diversion and grade separation, Syracuse, N. Y., $18,000,000 (75 per cent completed). Consolidation of electric service, involving retirement of power plant, Weehawken, N. J., $154,000 (completed).

Relocation of U. S. Route 20 as an extension of Main street, involving new highway bridge over Huron river and establishing new crossings (grade separation) with N.Y.C. and W. & L.E., Monroeville, Ohio, $200,000, railways' proportion, $17,000 (25 per cent completed). Four-track underpass, Dunes Relief highway, U. S. Route 20, Porter, Ind., $100,000, joint with state (completed). Track elevation, South Bend, Ind., $456,000, PWA project, railway bears cost of track changes only (completed).

(Michigan Central). Two bridges over U. S. Route 12, Chelsea,

Mich., $120,000, NRA project (50 per cent completed). Replacement of existing bridge with new concrete and steel construction, U. S. Route 12, Battle Creek, Mich., $115,000, NRA project (30 per cent completed). Viaduct carrying U. S. Route 41 over M. C., Penna., and E. J. & E., Hartsdale, Ind., $144,000, PWA project (completed). Viaduct carrying state route M-139, Benton Harbor, Mich., $175,000, PWA project (completed).

(Indiana Harbor Belt). Five-track subway to eliminate grade crossing, state route 54, North avenue, Melrose Park, Ill., $290,000, PWA project (completed).

(Chicago River & Indiana). Viaduct carrying Pershing road over tracks, Chicago, $290,000, PWA project (5 per cent completed).

New York, Chicago & St. Louis

Important Work Undertaken: Yard extension, removal of part of existing yard and construction of subway at Eighty-Seventh street, Chicago, $371,000 (completed). Replacement of existing single-track steel viaduct with new structure having solid floor, remodeling existing foundations, State Line, Pa., $157,979 (completed).

New York, New Haven & Hartford

Important Work Undertaken: Elimination of four grade crossings by construction of double track bridge, a footbridge and a marginal highway, Hartford, Conn., $1,200,000 (20 per cent completed). New steam-generating unit in power house, Cos Cob, Conn., $122,570 (30 per cent completed). Extension of boiler house and renewal of boilers, Cedar Hill, Conn., $105,000 (completed). Rearrangement of tracks, platforms, signals, etc., in connection with drawbridge over Cape Cod Canal, Buzzards Bay, Mass., $155,000 (75 per cent completed). Highway bridge over tracks, replacing grade crossing at Main street, South Weymouth, Mass., $150,000 (25 per cent completed). Replacement of slip switches with crossovers and consolidation of three interlockings for operation from a single point, Readville, Mass., $170,000 (50 per cent completed).

Norfolk & Western

New Lines Under Construction: Extension of Buchanan branch, 15 miles, Grundy, Va. Construction of Dismal Creek branch, from mouth of Dismal Creek, Va., 24.4 miles.

Important Work Undertaken: New coal pier—No. 5—Lambert Point, Norfolk, Va., $1,600,000 (95 per cent completed).

Pennsylvania

Second Track: 1.25 miles, Baltimore, Md.

Third Track: 0.40 mile, Baltimore, Md.

Important Work Undertaken: Additional mail-handling facilities, in connection with extension to general post office, Pennsylvania station, New York (completed). Installation of five escalators, Pennsylvania station, New York (completed). New station and express building, three new bridges over Passaic river, track elevation and additional tracks, Newark, N. J. (65 per cent completed). Changes in power transmission and distributing system, New York (completed). Replacing wooden float bridge with girder construction, New York (completed). Renewal of crosswalks and platforms, Sunnyside yard, Long Island, N. Y. (completed). Electrification of freight lines, Greenville, Waverly, Passaic, Harsimus, Meadows and South Amboy branches (completed). Electrification of passenger and freight service, New York to Washington, D. C.: Section 1, New York to Liddonfield, Pa. (completed); Section 2, Liddonfield to Black River, Md. (completed); Section 3, Black River to Washington (completed).

Construction of new passenger terminal and rearrangement of yard and engine facilities, Philadelphia, Pa. (87 per cent completed). New line and other improvements through Baltimore, Md. (75 per cent completed—remainder of work deferred). Revision of line and elimination of grade crossings, Elkton, Md. (completed). Track elevation to eliminate four grade crossings, Elmira, N. Y. (95 per cent completed). Reconstruction of bridge over Anacostia river, Washington, D. C. (completed). Repairing and waterproofing B. & P. tunnel, Baltimore, Md. (completed). Additions to power plant, Philadelphia, Pa. (completed).

Facilities for rail to river freight transfer, Baden, Pa. (30 per cent completed, part of facilities in operation, work on remainder suspended). New freight house replacing two buildings destroyed by fire, Erie, Pa. (completed). Track elevation to eliminate five grade crossings, East Aurora, N. Y. (completed). Elimination of grade crossing by overhead bridge, Allegany, N. Y. (completed).

Approximate cost of the foregoing projects is $185,896,000.

Relocation of 5.62 miles of line, Dover, Ohio, in connection with Dover reservoir, Muskingum Conservancy District. $242,000 (60 per cent completed). Relocation of 3.37 miles of line, Guernsey, Ohio, in connection with the Wills Creek reservoir, Muskingum Conservancy District, $416,000 (started). Relocation of 1.85 miles of line, Brinkhaven, Ohio, in connection with Mohawk reservoir, Muskingum Conservancy District, $193,000 (40 per cent completed). These three projects are being carried out by the Corps of Engineers, United States Army.

(Long Island). Construction of subway to eliminate grade crossing, Central avenue, Glendale, Long Island, N. Y. (completed). Track depression of about 12 ft. to eliminate two grade crossings and construction of a station and incidental facilities, Great Neck, Long Island, N. Y. (completed). Track elevation, 2½ miles, to eliminate eight grade crossings, new stations and incidental facilities, St. Albans to Springfield Gardens, Long Island, N. Y. (75 per cent completed).

Approximate cost of foregoing improvements, $1,927,500.

(Pennsylvania-Reading Seashore Lines). Removal of tracks from Seventh street and paving street, Camden, N. J. (completed). Consolidation of passenger terminals of West Jersey & Sea Shore and former Atlantic City, construction of new station and grade crossing elimination, Atlantic City, N. J. (completed).

Approximate cost of the foregoing projects, $6,000,000.

Pere Marquette

Important Work Undertaken: Grade separation, Telegraph road, Detroit, Mich., $200,000, PWA project (80 per cent completed). Grade separation, U. S. Route 16, Lansing, Mich., $175,000, PWA project (80 per cent completed).

Reading

Important Work Undertaken: Construction of new overhead bridge, replacing existing viaduct, to carry relocated State Route 281 over tracks, Janney, Pa., $160,000, PWA project (completed).

St. Louis-San Francisco

Important Work Undertaken: Reinforced concrete viaduct over tracks of St. L.-S. F. and M-K-T, Seventh avenue, Kansas City, Mo., $314,000 (completed). Concrete and steel viaduct over tracks of St. L.-S. F. and M. P., Independence avenue, Kansas City, Mo., $275,000 (completed). Reinforced concrete viaduct over tracks of St. L.-S. F., M. P. and River des Peres, Hampton avenue, St. Louis, Mo., $366,000 (80 per cent completed). Reinforced concrete viaduct over tracks of St. L.-S. F., L. & N. and Southern, Ninth avenue, Bessemer, Ala., $140,000 (30 per cent completed).

Southern

First Track: At Emory Gap, Tenn., 0.55 mile.

Southern Pacific

. st Track: (Pacific Lines) Santa Clara, Cal., to Lick, 5.92 miles. Change of line through San Jose, Cal., 0.30 mile.

Second Track: (Pacific Lines) Change of line Santa Clara, Cal., to San Jose, 1.63 miles. At Lick, Cal., in connection with line revision, 0.52 mile.

New Lines Under Construction: (Lines in Texas and Louisiana) Malvado, Tex., to Thurston, 6.48 miles. Feodora, Tex., to Sanderson, 6.74 miles.

Important Work Undertaken: (Pacific Lines) Reinforcing three steel viaducts to withstand Coopers E-70 loading, at Lento, Cal., Gaviota and Capitan, N. M., $181,000 (completed). Installing fourteen 91-ft. deck girders over Santa Maria river, replacing seven 180-ft. through pin-connected spans, Guadalupe, Cal., $205,000 (20 per cent completed—additional piers completed). Line revision and construction of new passenger station and incidental facilities involving 8.37 miles of new line and 4.31 miles of sidings and the five grade crossings, San Jose, Cal., $2,307,000 (completed).

The following are all PWA projects: Grade-crossing elimination subway, state highway, Agnew, Cal., $146,000 (completed). Grade crossing elimination, Folger avenue, Berkeley, Cal., $155,000 (completed). Grade-separation subway, Bay Shore highway, South San Francisco, Cal., $195,000 (90 per cent completed). Elimination of grade crossing with state highway, Delano, Cal., $120,000 (completed). Subway to eliminate grade crossing, Seventeenth avenue, Phoenix, Ariz., $102,000 (completed). Subway to eliminate grade crossing, Stone avenue, Tucson, Ariz., $125,000 (completed). Elimination of grade crossing with state highway, Casa Grande, Ariz., $85,000 (completed). Overhead bridge, North street, Redding, Cal. (completed).

The following WPA projects have been started: In the state of California—13 grade-separation subways, total cost to be $2,590,000; 8 overhead bridges to eliminate grade crossings, total cost to be $1,433,000; and 1 major line change to eliminate a grade crossing, $350,000.

In the state of Nevada—3 subways, total cost to be $180,000; and 1 overhead bridge to cost $100,000.

In the state of Utah—1 overhead bridge to cost $100,000.

In the state of Oregon—3 grade separation subways to cost a total of $555,000; and 5 overhead bridges to cost $777,000.

In the state of Arizona—2 grade-crossing elimination subways to cost $250,000; 4 overhead bridges to cost $275,000; and 1 line revision to eliminate a grade crossing, $238,000.

In the state of New Mexico—3 subways to eliminate grade crossings to cost $160,000; and 6 overhead bridges to cost $339,200.

(Lines in Texas and Louisiana). Construction of yard and engine terminal and incidental facilities, in connection with Mississippi River bridge, Avondale, La., and New Orleans, $529,751 (completed). Replacement of Nueces River bridge, Hacienda, Tex., $112,124 (10 per cent completed).

Spokane, Portland & Seattle

First Track: Relocated line to bring grade above backwater pool of Bonneville dam, involving 4.84 miles of new line and construction of station and yard at North Bonneville, Wash., $475,000 (completed).

Union Pacific

First Track: (Los Angeles & Salt Lake) Iron Springs, Utah, to Iron Mountain, 10.79 miles.

New Line Under Construction: (Oregon-Washington Railroad & Navigation) At Bonneville, Ore., 4.15 miles, being built by Public Works Administration in connection with Bonneville dam.

Important Work Undertaken: Overhead bridge to separate grades with U. S. Route 30-S, constructed by state, Lane, Neb. (completed). Viaduct over tracks of U. P., C. B. & Q., A. T. & S. F. and M. P., to eliminate grade crossing with U. S. Route 81, Lincoln avenue, Concordia, Kan., $178,000, built by state (completed). Viaduct to eliminate grade crossing, Colorado boulevard, Denver, Colo., built by state (completed).

(Oregon Short Line). Viaduct to eliminate grade crossing with U. S. Route 89, Quartz street, Kemmerer, Wyo., built by state (completed).

(Oregon-Washington Railroad & Navigation Company). Viaduct to abolish grade crossing with Inland Empire eastern route, Oakesdale, Wash., $110,000, built by state (completed). Subway to abolish grade crossing with Wallowa Lake state highway, La Grande, Ore., $100,000 (60 per cent completed).

Virginia & Truckee

First Track: Line revision to eliminate wooden trestle, 0.33 mile, Gold Hill, Nev.

Wabash

Important Work Undertaken: Viaduct to carry Page avenue over tracks, St. Louis, Mo., $254,000, work being done by state highway department (completed). Construction of new bridge over Missouri river, St. Charles, Mo., $5,500,000 (50 per cent completed).

Western of Alabama

Important Work Undertaken: Elimination of grade crossing by constructing reinforced concrete overhead bridge, Day street, Montgomery, Ala., $153,000 (30 per cent completed).

Western Maryland

Important Work Undertaken: Track layout, Bergoo No. 4 mine, Bergoo, W. Va., $154,000 (completed).

Wheeling & Lake Erie

Important Work Undertaken: Relocation of 9.35 miles of line to get above pool back of Beach City dam, Muskingum Conservancy District, Beech City, Ohio, $592,000 (20 per cent completed). Relocation of 14.6 miles of line in connection with Dover reservoir, Muskingum Conservancy District, Dover Ohio, $1,640,000 (started). Both of these projects are being carried out by the Corps of Engineers, United States Army.

(Continued on page 70)

Cost of Railway Materials Steadier in 1935

Increases since 1933 have added over $60,000,000 to railway expenses — Coal conditions unsettled—Better returns from railroad scrap

By D. A. Steel
Purchases and Stores Editor

Higher Prices Obtained for Scrap in 1935

AFTER the confusion and delirium of 1933 and 1934, caused by the prolonged paralysis of business and the unprecedented flood of laws, experiments and other schemes for safeguarding, controlling and rehabilitating economic and social conditions, the last twelve months reflected marked stability in those factors which influence the large and diverse purchases of the railroads and the costs which enter into the materials they buy. In fact, some prices, in the opinion of the railroads, were altogether too stable for the competition that is supposed to prevail among dealers for the limited amount of purchasing the railroads have done as yet. Barring lumber and also the situation in the coal industry, pending the outcome of the Guffey bill in the courts, wide changes in the costs of railway materials were rare last year although the level is now slightly higher than in 1934, and, of course, considerably higher than in 1933 and 1932 when business was at its worst.

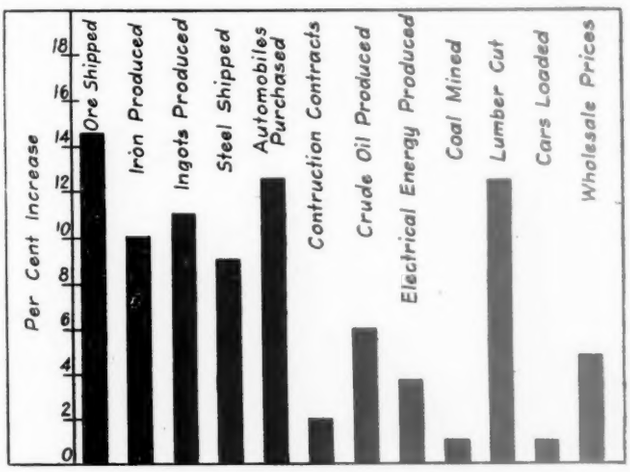
Conditions and Changes Not Uniform

This does not mean that conditions and changes were everywhere uniform. With few exceptions, all roads paid more for coal. While three roads of nine, selected at random, paid more for fuel oil, three others paid from 8 to 25 per cent less and still another group of three bought their oil all year at 1934 rates. The average cost in two railway operating regions was below the 1934 rate. While three roads of nine paid more for lumber, four paid less and eight paid less or not more for their 1935 ties. Six paid 1934 prices for iron and steel. Average prices for 67 commodities, excluding fuel, were higher than in 1934 in 31 instances and unchanged or slightly lower in 36 instances. The yearly average was 5 per cent higher than in 1934 for coal; 12 per cent higher for fuel oil; 7 per cent lower for lumber and ties; 2 per cent more for iron and steel and miscellaneous items; and 12 per cent more for railroad scrap. The combined increase was about 2 per cent.

Counting from 1932 or 1933, whichever was lowest, there has been an average increase of 20 per cent in the cost of coal to the railroads, 27 per cent in fuel oil, 77 per cent in lumber, 15 per cent in products of iron and steel, 18 per cent in miscellaneous supplies, and 80 per cent in the price offered for railroad scrap. Tie costs are 4 per cent less and rail 13 per cent less. Supplies purchased have been increased over $60,000,000 by higher costs since 1932 or 1933, of which about $30,000,000 was caused by increased cost of fuel.

Prices Back to 1930 and 1931 Level

Prices generally are now back where they were in 1930 and 1931, with the principal exception of rail and ties; and all prices, especially lumber, are so much stronger than at this time last year as to suggest advances during the coming year, with increases in railway buying, which have already occurred since October, and those which are in immediate prospect. Recent expe-



Comparison of Market Activity with 1934

riences of railroads in purchasing have even demonstrated that the recurrence of a sellers' market, after many years of advantage for the buyer, is not impossible in some lines of purchasing.

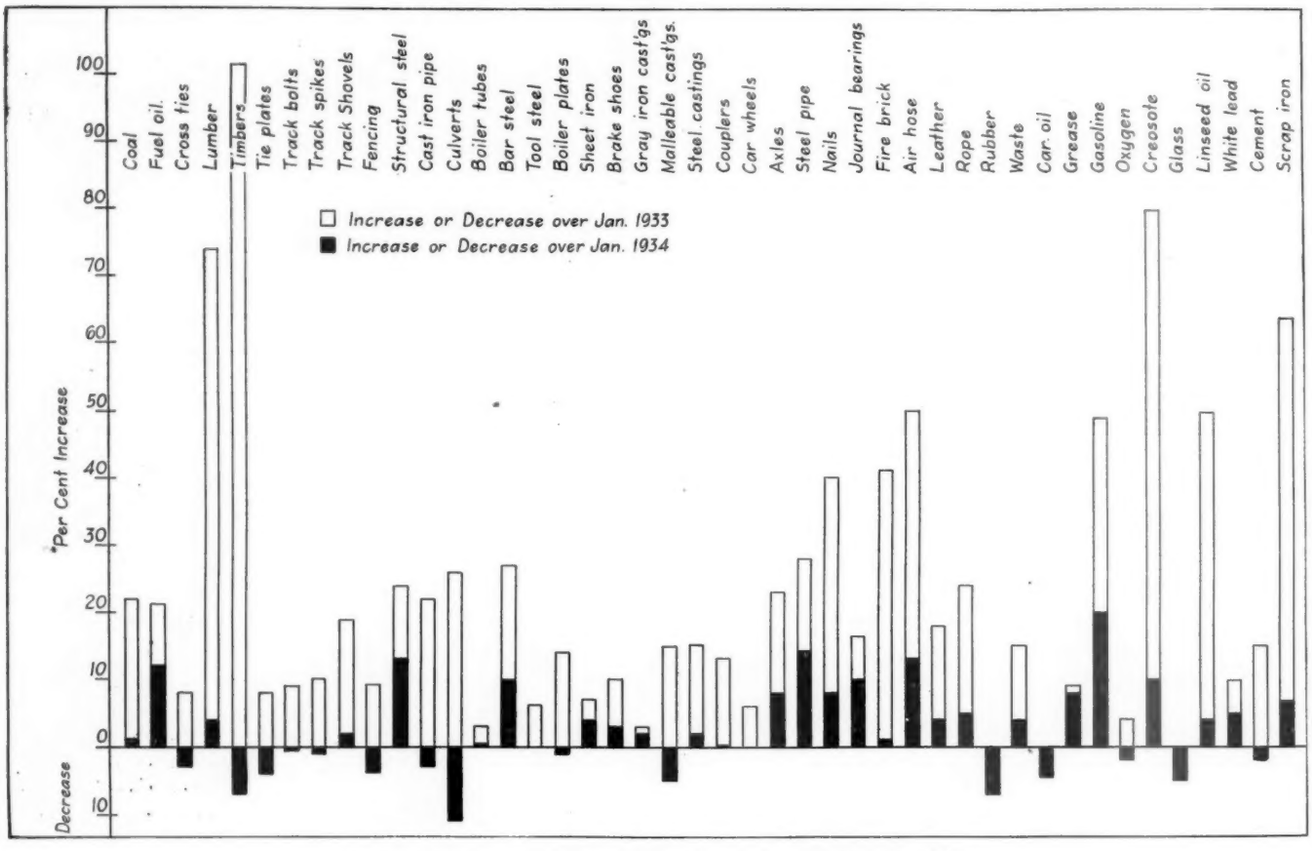
King Coal Before Courts

Outstanding developments of the past year bearing on the cost of coal to railroads were the enactment in August of the Bituminous Coal Conservation Act, or so-called Guffey bill, and the adoption of the so-called Appalachian wage agreement throughout the country establishing a seven-hour day. The Guffey bill was an outgrowth of the N. R. A. coal code of 1933 and sought to overcome the lack of enforcement which was destroying the effectiveness of that code even before N. R. A. was declared unconstitutional. It was adopted during a general strike, with the support of coal producers who profited under N. R. A., and created a national coal commission and a new code authorizing the fixing of minimum prices and other powers over coal, with the exception of a direct control over production or the allocation of tonnage. Technically, membership is not compulsory but is "encouraged" by the ingenious device of levying a government tax amounting to 15 per cent of the sale price of all domestic coal not consumed by the government, with a 13½ per cent refund to all code members. Included in the bill is the provision empowering the government, as recently interpreted, to cancel mail or other contracts with railroads failing to purchase coal from code members. Interest of the railroads in such developments is apparent when it is considered that coal provides 85 per cent of the fuel used in locomotives; that coal transportation has produced from 26 to 33 per cent of the combined freight of all the carriers and from 16 to 19 per cent of total rail revenues.

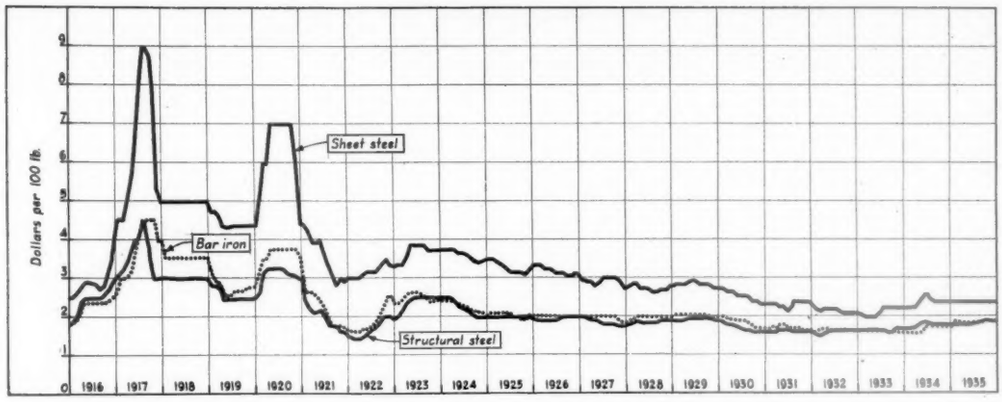
Except as to the tax, the bill is not yet functioning and its outcome is still uncertain. Although two-thirds of the tonnage has been signed up, the signataries are not prevented from contesting the Act and about 70 contests are now pending in the federal courts. Even if the Act is upheld, as might be supposed from two favorable decisions already handed down in lower courts, the Act offers no sure protection against the opening of new mines with increased prices, while waterpower developments, and the continuing freedom of buyers to use substitute fuels, hang heavy over the heads of regional coal boards that would indulge in price boosting. The fact that imports of coal from Russia alone rose 200 per cent last year is another factor in the coal buyers' favor, as well as the continued search for further economies in the utilization of coal by the large consumers.

With increases of 40 to 100 per cent in coal costs in eastern territory under the N. R. A. also admissions in public hearings that producers will try to legislate additional increases in prices, and the award to labor of approximately 15 cents a ton, made last year under wage agreements, the railroads are none the less concerned; especially those railroads that own mines and will have to pay heavy income taxes if the sales prices on the coal from their mines is standardized with other coals produced in the same district.

In the meantime, many have succeeded in contracting for locomotive coal at not to exceed N.R.A. code prices and in purchasing steam plant coal under commercial prices. While some increases appear certain with the expiration of present contracts in March, the railroads are said to be securing better grades for the prices paid. Moreover, the wage agreement is a protection, until 1937, from strikes and such disturbances within union



Average Increase in Prices of Railroad Materials Since January, 1933



Trend of Iron and Steel Prices, 1916 to 1935

ranks as those which caused so much damage to railroad property last year in Southern Illinois.

Fuel Oil Keeps Roads in Stir

Railroads consumed almost 2 billion gal., or 5 million bbl., of fuel oil in locomotives last year, which is an increase of approximately 3 per cent over 1934, as compared with a 1½ per cent reduction in the consumption of coal for the same purpose. The introduction of Diesel motive power and the adoption of fuel oil for new steam trains, such as the Milwaukee's "Hiawatha" and the Northwestern's "400," as well as increases in traffic, have contributed to this increase and promise further increases in railroad consumption.

Prices to large consuming roads usually bear a fixed relation to the price of crude oil and are arranged by producers and the railroads in joint conference. The railroads have experimented with joint committees of purchasing agents to protect their interests, but the competition among the railroads for the traffic of refiners, and recurring fears of a restriction in the supply of heavy oil in places, make co-operation difficult. The refiners seem alert in making the most of the situation and usually end up with the long end of the bargain, despite the increasing degree to which they are shipping by truck and pipe. This was exemplified during the past year when agreements for 60-cent oil were disrupted by railroad contracts for 65-cent oil.

Oil at 25 cents a bbl. is a thing of the past; and the prices last year, ranging from 58 to 85 cents a bbl. for tank shipments of heavy oil to $2.10 a bbl. for drum lots of lighter oils, were generally higher than in 1934. Sales taxes levied by some states have added their bit to the ultimate costs of this commodity to the railroads. Opinion is strong that prices will advance this year. The voluntary association of states having pro-ration laws into a so-called Interstate Oil Compact is not without interest in this connection, as well as the drop of 7 million bbls., or 6 per cent, in stocks of crude this year. On the other hand, it is argued that there is surplus of the grades used by railroads.

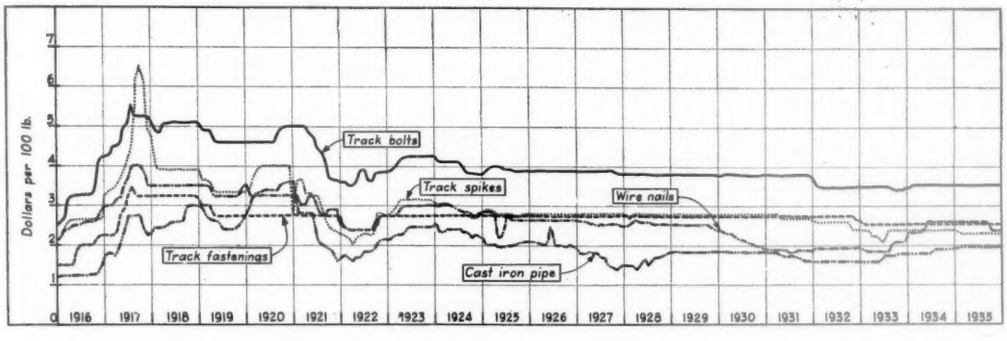
Prevailing prices for gasoline in tank lots ranged from 4.5 to 9.5 cents a gal. on nine roads. These prices were higher in all instances than was paid a year ago by the same roads, and the year's average of 5.4 cents, paid by the same roads, was 9 per cent over the average paid in 1934.

Little Change in Steel Prices

The market from which the railroads supply their needs of iron and steel is a pool which appears neither to have been noticeably disturbed by the launching of the N.R.A. codes in 1933 nor by the scuttling of that experiment in 1934, except where enterprising firms with independent sources of raw materials were reasonably free to operate. The notable stability of and effective control over the steel markets was again demonstrated during the past year when the prices at which most material could be purchased by the railroads, continued month after month without change, in the face of an expansion of business which increased oil production 29 per cent, pig iron production 20 per cent, steel ingot production 22 per cent, shipments of steel 18 per cent, automobile production 25 per cent, and forced operations in the durable goods industries higher than any year since 1929.

To a slight degree, prices reflected the effort of mills to distribute net increases in labor costs of some operations, also sales taxes; but they also suggest the hesitancy to discourage increases in buying by raising prices, and the traditional policy of the railroads to "Buy American," as well as their practice to divide purchases with the larger and stronger firms, resulted in greater stability, even among the prices paid for railway supplies. Prices of railroad materials, for the most part, remained the same all year, except where railroads obtained reductions allowed for buying larger quantities than previously and the similarity of prices paid by different roads was more pronounced, if anything, than before.

Tie plates were unchanged all year to nine roads, at prices ranging from $38 to $38.50 a ton with and without copper. Track bolts, ranging from $3.55 to $3.97



Track Material Costs, 1916 to 1935

Average Unit Costs of Railroad Materials—1927-1935

Description	Unit	1927	1928	1929	1930	1931	1932	1933	1934	1935 First Quarter	1935 Mid-year	1935 Last Quarter	1935 High	1935 Low	1935 Average	Per Cent of 1934	Per Cent of 1933
TRACK MATERIALS																	
Rail	N. t.	$43.00	$43.00	$43.00	$43.00	$43.00	$42.00	$38.79	$36.37	$36.37	$36.37	$36.37	$36.37	$36.37	$36.37	100	94
Tie plates, Steel	N. t.	45.98	42.43	42.10	41.22	38.88	36.40	36.64	39.56	38.73	38.73	38.73	40.87	38.00	38.73	98	105
Track bolts, Heat-treated, with nuts	Cwt.	4.00	3.83	3.75	3.94	3.74	3.42	3.52	3.71	3.71	3.71	3.71	3.99	3.55	3.71	100	105
Track chisels, Alloy steel	Ea.	1.96	1.76	1.74	1.71	1.64	1.64	1.70	1.71	1.79	1.79	1.79	2.80	1.68	1.79	105	105
Track spikes, High-carbon steel	Cwt.	2.80	2.76	2.71	2.68	2.57	2.45	2.32	2.46	2.46	2.46	2.46	2.69	2.40	2.46	100	106
Track shovels, No. 2 carbon steel	Doz.	12.95	13.82	11.28	10.02	9.98	10.93	11.53	13.20	13.26	13.26	13.26	15.95	11.08	13.26	100	116
Bond wire, 35 in. to 48 in. copper clad	Cwt.	14.78	17.50	18.56	17.69	15.89	14.48	14.99	16.27	16.38	16.27	16.35	18.45	14.62	16.33	100	109
Wire fence, 26 in. to 47 in. woven	Rod	.467	.488	.426	.428	.396	.383	.370	.402	.417	.416	.415	.549	.276	.416	103	112
Steel, structural, Angles	Cwt. b.	1.98	1.98	2.35	1.98	1.84	1.73	1.75	1.93	1.95	1.95	1.96	2.37	1.80	1.96	101	112
Steel, structural, Fabricated	Cwt. b.	4.17	4.17	3.32	3.35	2.73	2.72	2.90	3.28	3.43	3.45	3.49	4.15	2.95	3.46	105	119
Pipe, cast-iron, 12 in. Class B	N. t.	41.13	41.13	39.41	40.37	35.58	33.94	37.91	40.80	40.48	40.60	40.80	51.00	36.00	40.60	100	110
Pipe, clay, 24 in. vitrified	Ft.	1.39	1.38	1.16	1.76	1.40	1.40	1.95*	2.02*	2.16*	2.16*	2.16*	3.23*	1.66*	2.16*	107	124
LOCOMOTIVE AND CAR MATERIALS																	
Bolts, with nuts, ¾ by 6, machine	100 pcs.	5.13	5.02	4.87	4.81	4.20	4.04	4.70	4.59	4.12	4.02	4.12	4.53	3.60	4.08	89	87
Boiler tubes, 2-in. No. 11 gage steel	Ft.	.172	.172	.174	.154	.152	.152	.156	.161	.161	.161	.161	.184	.152	.161	100	103
Bar steel, Open-hearth	Cwt. b.	2.13	2.58	2.17	1.85	1.80	1.72	1.73	1.84	2.00	2.00	2.04	2.30	1.80	2.01	109	116
Steel, High-speed tool	Lb. b.	.59	.58	.57	.66	.52	.49	.52	.60	.61	.61	.61	.90	.55	.61	101	112
Steel, Boiler	Cwt. b.	2.01	2.00	2.33	2.01	1.86	1.73	1.82	2.10	2.04	2.05	2.05	2.52	1.80	2.05	98	113
Steel, Spring	Cwt. b.	2.74	2.63	2.84	2.62	2.42	2.18	2.23	2.31	2.35	2.36	2.38	3.50	1.85	2.36	102	106
Steel, 24-gage black	Cwt.	3.20	2.99	3.25	2.90	2.65	2.69	2.68	2.72	2.81	2.84	2.77	3.93	2.40	2.81	103	105
Pig iron, No. 1	G. t.	20.50	20.50	17.35	16.61	15.37	14.85	15.74	18.30	18.55	18.55	18.67	19.10	18.00	18.59	101	118
Brake shoes, Locomotive driving	N. t.	61.70	61.70	59.54	60.00	56.53	54.28	54.50	56.30	56.65	56.65	56.65	65.00	55.00	56.65	101	104
Brake shoes, Freight car	N. t.	36.93	39.98	37.55	35.42	35.12	32.70	33.40	35.00	36.00	36.00	36.00	43.00	35.00	36.00	103	108
Castings, grey iron, Green sand	Cwt.	3.86	3.97	4.12	4.12	4.09	3.82	3.82	3.90	3.84	3.89	3.89	4.43	3.20	3.87	100	101
Castings, malleable, 7 to 15 lb., 25 to 100	Cwt.	9.13	8.50	8.68	8.27	7.68	7.59	7.42	8.99	8.29	8.29	8.29	9.15	5.10	8.29	93	112
Castings, steel, 25 to 50 lb., under 50	Cwt.	8.64	7.97	8.32	8.46	7.73	7.37	7.25	8.52	8.49	8.49	8.49	9.50	8.40	8.49	100	117
Couplers, car, 5 by 7 by 6½ ARA	Pr.	41.20	40.20	40.20	41.20	39.20	38.13	37.20D	40.20D	40.20D	40.20D	40.20D	40.20D	40.20D	40.20D	100	108
Wheels, car, 33-in. chilled iron	Cwt.	....	....	....	....	....	....	1.35	1.40	1.40	1.40	1.40	1.40	1.40	1.40	100	103
Axles, locomotive, Driving, carbon	Cwt.	5.16	5.21	4.84	4.29	4.75	4.55	4.56	4.90	4.99	5.00	5.20	5.42	4.50	5.06	103	111
Axles, car, 5 by 9, rough turned	Cwt.	2.94	2.94	2.94	2.88	2.88	2.75	2.53	2.89	2.81	2.83	3.04	3.60	2.65	2.98	103	118
Tires, freight locomotive, 33-in., rough bored	Cwt.	6.11	6.11	5.84	6.22	.603	5.86	5.55	5.67	5.96	5.97	5.97	7.14	5.59	5.97	105	108
Pipe, 1-in. black steel	Ft.	.076	.069	.066	.067	.069	.063	.063	.066	0.67	.068	.068	.093	.058	.069	103	109
Wire nails, Common	Cwt. b.	2.58	2.62	2.62	2.29	2.07	2.18	2.23	2.62	2.89	2.89	2.71	4.10	2.60	2.83	108	127
Pig lead, Virgin	Cwt.	7.04	6.43	6.95	5.64	4.42	3.53	4.17	4.04	4.07	4.36	4.90	6.62	3.55	4.44	110	106
Copper, Sheet, soft	Lb.	.218	.23	.27	.259	.181	.180	.169	.180	.212	.209	.211	.285	.190	.211	117	125
Journal bearings, A. R. A.	Lb.	.142	.141	.167	.149	.10	.07	.081	.093	.097	.093	.098	.108	.065	.096	103	118
Wire, copper, No. 9 bare	Lb.	.149	.167	.195	.163	.115	.100	.113	.138	.143	.138	.144	.185	.131	.141	102	124
Wire, copper, T. B. weather, No. 10	Cwt.	18.70	19.73	21.00	19.00	15.81	13.00	18.30	18.80	18.93	18.33	19.01	20.13	17.95	18.76	100	102
MISCELLANEOUS																	
Boiler lagging, 1¼ in. by 6 by 36 mag.	Sq. ft.	.21	.22	.236	.160	.155	.156	.156	.157	.160	.160	.160	.191	.152	.160	102	103
Fire brick, Soft	M	41.74	43.08	41.73	41.85	39.29	34.70	37.20	44.58	44.91	45.43	45.43	47.75	40.00	45.26	101	122
Hose, Air-brake, 1⅜ by 22	Ft.	.48	.46	.44	.45	.37	.33	.31	.39	.42	.41	.41	.42	.36	.41	105	132
Leather, Belting, 6-in. double	Ft.	1.22	1.35	1.39	1.39	1.23	1.27	1.17	1.32	1.30	1.31	1.31	1.58	.73	1.31	99	112
Rope, ¾-in. manila	Lb.	.217	.199	.199	.180	.153	.142	.127	.139	.124	.124	.142	.225	.084	.130	94	102
Cable, ¾-in. 6 by 19 plow steel	Ft.	.125	.119	.144	.14	.143	.132	.137	.155	.162	.160	.160	.214	.130	.161	104	117
Rubber, red, ⅛-in. sheet packing	Lb.	.32	.28	.247	.25	.225	.176	.172	.177	.167	.167	.167	.167	.167	.167	95	97
Gasoline	Gal.	....	....	....	....	....	.049	.047	.049	.042	.053	.058	.107	.035	.051	104	108
Oil, Long time—tanks	Gal.	.096	.09	.087	.117	.062	.061	.051	.053	.053	.052	.051	.080	.035	.052	98	10
Oil, Car—tank lots	Gal.	.180	.157	.157	.163	.138	.127	.134	.135	.132	.132	.132	.155	.102	.132	98	99
Grease, Driving box	Lb.	.160	.122	.125	.131	.122	.118	.109	.104	.103	.103	.103	.145	.090	.103	99	95
Waste, Colored cotton	Lb.	.098	.091	.086	.084	.076	.051	.057	.065	.054	.057	.062	.080	.045	.057	88	100
Creosote oil, Tank lots	Gal.	.157	.157	.139	.130	.115	.108	.093	.106	.112	.113	.117	.120	.095	.116	110	125
Glass, 24 by 24 dsa.	Box	5.23	5.10	5.76	5.84	4.80	4.71	5.18	4.59	5.12	5.01	4.98	6.43	3.31	5.03	110	97
Linseed oil, Boiled	Lb.	.088	.093	.117	.120	.09	.068	.087	.095	.100	.103	.104	.124	.092	.103	108	118
White lead, In oil—100-lb. keg	Lb.	.11	.102	.104	.106	.107	.088	.08	.081	.084	.085	.085	.11	.079	.085	105	10
Cement, Portland, In paper	Bbl.	2.21	1.85	1.87	1.76	1.42	1.42	1.80	1.95	2.17	2.16	2.15	3.00	1.60	2.16	110	120
Soda ash, Water softening	Cwt.	1.33	1.40	1.46	1.56	1.55	1.30	1.21	1.31	1.32	1.32	1.32	2.67	1.09	1.32	100	109
Hydrated lime, Water softening	N. t.	13.63	11.99	11.96	9.73	9.53	9.49	8.35	8.50	8.55	8.47	8.43	17.40	6.30	8.48	100	101
Oxygen	100 cu. ft.	1.29	1.04	1.03	1.05	1.06	1.02	1.04	1.10	1.09	1.04	1.03	1.25	.69	1.06	96	102
FOREST PRODUCTS—MILL																	
Lumber, Fir, 1 by 6 No. 1 com.	M ft.	27.81	27.81	20.02	15.56	10.83	18.76†	25.14†	31.40†	30.33†	33.73†	32.55†	47.00†	25.00†	32.10†	102	127
Lumber, Pine, 2 by 4 by 10, No. 1 com.	M ft.	32.93	29.99	26.21	25.83	18.93	21.83‡	36.75‡	45.00‡	35.57‡	37.43‡	38.66‡	49.50‡	32.50‡	37.29‡	83	102
Lumber, Fir sill, 6 by 10 by 40	M ft.	33.02	31.69	21.50	21.76	14.50	10.23§	13.00§	19.00§	17.72§	18.55§	17.67§	$23.30	12.50§	17.98§	95	130
Bridge stringers, Fir, 8 by 16 by 28 struct.	M ft.	35.38	29.15	20.53	18.70	14.90	12.52¶	15.70¶	23.50¶	20.50¶	21.78¶	21.17¶	30.00¶	15.00¶	21.15¶	91	136
Cross ties, Fir, 7 by 9 by 8' 6	Ea.	.60	.60	.67	.80	.50	.50	.49	.53	.49	.49	.49	.54	.44	.49	93	100
Cross ties, Pine, 7 by 9 by 8' 6	Ea.	.67	.67	.67	.77	.65	.73	.64	.62	.56	.57	.57	.90	.25	.57	92	89
Cross ties, White oak, 7 by 9 by 8' 6	Ea.	.98	.95	.93	.92	.83	.75	.69	.69	.64	.65	.67	1.15	.40	.67	92	92
SCRAP SOLD																	
Railroad scrap, No. 1 railroad wrought	N. t.	11.16	11.39	11.96	8.68	7.20	4.20	6.65	7.96	8.93	8.61	9.68	10.75	8.05	9.07	114	136
Railroad scrap, No. 1 heavy melt	N. t.	11.63	11.34	12.82	10.62	7.33	5.34	7.32	8.55	9.14	8.76	9.98	11.17	6.65	9.29	108	126
Railroad scrap, Rails for rerolling	N. t.	13.80	12.92	14.49	12.55	10.05	7.18	8.10	9.22	9.63	9.34	10.70	13.35	8.10	9.89	107	121

* Culvert, corrugated. † 1 by 6 by 9 B&B siding. ‡ 2 by 6 by 18 B&B siding. § 6 by 6 sel. com. rgh. ¶ 16-in. by 32-ft., or less.

per cwt., were also unchanged all year, although a slight increase has been announced recently by one producer. The prices of track spikes, ranging from $2.26 to $2.52 per cwt. for different grades, has been unchanged. This was true of track chisels, which were purchased at prices ranging from $1.68 to $1.75 each by different roads, and also track shovels, which different roads bought at prices ranging from $11.08 to $14.80 a doz. all year.

An exception to the general rule was wire fence. The cost increased from 32.7 cents a rod in January, 1934, to 34.1 cents at present to one road, and from 41.0 to 52.0 cents to another road; and declined from 56.2 to 54.6 and from 54.1 to 34.6 cents on other roads, for example, with the average cost of 42.3 cents during 1935 on eight roads, running 5 cents a rod below the average for 1934.

Structural steel angles, ranging from $1.80 to $3.25 a ton delivered at present, show an increase of 5 cents per cwt. on two of twelve roads and a reduction of 2 cents on one road, while the year's average was 5 per cent over 1934. Fabricated steel has advanced since a year ago on three roads of nine and declined on two roads, while the average for the year of $3.64 per cwt. was 20 cents per cwt. above the previous year. Cast iron pipe

Average Cost Per Ton of Coal for Locomotives—Class I Railroads*

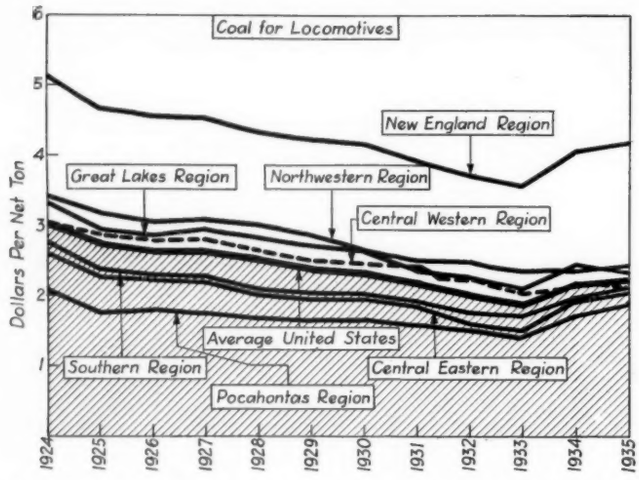
	1924 Dollars	1925 Dollars	1926 Dollars	1927 Dollars	1928 Dollars	1929 Dollars	1930 Dollars	1931 Dollars	1932 Dollars	1933 Dollars	1934 Dollars	1935‡ Dollars
New England Region	5.14	4.66	4.59	4.52	4.34	4.24	4.18	3.94	3.73	3.64	4.08	4.29
Great Lakes Region	3.31	2.98	2.88	2.96	2.84	2.73	2.64	2.37	2.25	2.15	2.44	2.47
Central Eastern Region	2.62	2.28	2.26	2.26	2.09	2.01	1.96	1.84	1.62	1.57	1.99	2.01
Eastern District	3.11	2.75	2.67	2.70	2.55	2.45	2.39	2.22	2.04	1.95	2.33	2.38
Pocahontas Region	2.13	1.78	1.82	1.78	1.69	1.67	1.68	1.66	1.58	1.52	1.77	1.83
Southern Region	2.78	2.40	2.31	2.26	2.19	2.10	2.06	1.95	1.79	1.74	2.00	2.09
Southern District	2.62	2.25	2.19	2.15	2.08	2.00	1.96	1.88	1.74	1.68	1.94	2.02
Northwestern Region	3.42	3.19	3.09	3.21	3.02	2.79	2.66	2.55	2.53	2.37	2.36	2.49
Central Western Region	3.06	2.90	2.83	2.83	2.68	2.51	2.49	2.45	2.24	2.11	2.14	2.14
Southwestern Region	3.16	2.95	2.85	2.88	2.64	2.42	2.29	2.15	1.88	1.76	1.79	1.81
Western Region	3.22	3.02	2.94	3.00	2.82	2.61	2.53	2.45	2.31	2.17	2.19	2.25
United States	3.03	2.72	2.63	2.66	2.53	2.40	2.34	2.21	2.05	1.96	2.20	2.26

*Invoice plus freight charges—I. C. C.
‡ 10 months.

Average Cost of Coal Per Ton—9 Months, 1935

Region and Road	With Freight 1935	With Freight 1934	Without Freight 1935	Without Freight 1934
New England Region:				
Bangor & Aroostook	$4.48	$4.21	$4.48	$4.21
Boston & Albany	4.39	4.29	2.11	1.96
Boston & Maine	4.27	4.09	2.17	1.44
Canadian National (In New Eng.)	4.97	4.63	1.65	1.32
Canadian Pacific (In Maine)	4.85	4.66	2.42	2.20
Canadian Pacific (In Vermont)	4.93	4.87	1.83	1.78
Central Vermont	4.94	4.73	1.96	1.77
Maine Central	4.51	4.63	4.51	4.63
New York, New Haven & Hartford	3.84	3.66	1.53	1.36
Rutland	3.94	3.65	1.40	1.29
Great Lakes Region:				
Ann Arbor	3.48	3.40	1.65	1.61
Cambria & Indiana	1.90	1.81	1.90	1.81
Delaware & Hudson	3.57	3.27	2.11	1.88
Delaware, Lackawanna & Western	3.13	2.96	1.63	1.52
Detroit & Mackinac	4.23	3.93	1.88	1.63
Detroit & Toledo Shore Line	3.46	3.38	1.81	1.81
Erie and Chicago & Erie	2.29	2.20	1.82	1.68
Grand Trunk Western	3.06	2.93	1.37	1.29
Lehigh & Hudson River	4.19	4.06	1.65	1.54
Lehigh & New England	3.41	3.01	1.73	1.34
Lehigh Valley	3.42	3.35	1.60	1.53
Monongahela	1.63	1.55	1.63	1.55
Montour	1.87	1.79	1.87	1.79
New Jersey & New York	4.79	4.62	1.85	1.74
New York Central	2.01	1.92	1.81	1.74
New York, Chicago & St. Louis	3.07	3.00	1.76	1.75
New York, Ontario & Western	3.41	3.11	1.83	1.45
New York, Susquehanna & Western	4.52	4.32	1.85	1.73
Pere Marquette	3.62	3.57	1.76	1.76
Pittsburgh & Lake Erie	1.94	1.96	1.91	1.91
Pittsburgh & Shawmut	1.90	1.79	1.90	1.79
Pittsburgh & West Virginia	1.82	1.71	1.82	1.71
Pittsburgh, Shawmut & Northern	1.93	1.79	1.93	1.79
Wabash	1.93	1.91	1.75	1.74
Central Eastern Region:				
Akron, Canton & Youngstown	2.88	2.57	1.84	1.58
Baltimore & Ohio	1.81	1.72	1.78	1.69
Bessemer & Lake Erie	2.00	1.97	1.93	1.89
Central of New Jersey	3.29	3.18	1.59	1.52
Chicago & Eastern Illinois	1.80	1.81	1.79	1.80
Chicago & Illinois Midland	1.94	1.90	1.94	1.90
Chicago, Indianapolis & Louisville	1.85	1.81	1.85	1.81
Detroit, Toledo & ronton	2.77	2.60	1.71	1.52
Elgin, Joliet & Eastern	1.73	1.75	1.73	1.75
Illinois Terminal	1.81	1.81	1.74	1.78
Long Island	4.21	4.13	1.85	1.83
Missouri-Illinois	1.70	1.52	1.64	1.49
Pennsylvania System	1.89	1.79	1.86	1.77
Penna.-Read.-Seashore Lines	4.27	4.51	1.82	2.33
Reading	3.00	2.82	1.65	1.55
Staten Island Rapid Transit	4.31	4.15	1.81	1.70
Western Maryland	1.93	1.84	1.91	1.83
Wheeling & Lake Erie	1.89	1.82	1.89	1.82
Pocahontas Region:				
Chesapeake & Ohio	1.83	1.75	1.83	1.75
Norfolk & Western	1.69	1.61	1.69	1.61
Richmond, Fredericksburg & Potomac	3.67	3.29	1.50	1.15
Virginian	1.81	1.73	1.81	1.73
Southern Region:				
Alabama Great Southern	1.96	1.79	1.94	1.79
Atlanta & West Point	3.10	2.96	1.88	1.75
Atlanta, Birmingham & Coast	1.95	1.98	1.95	1.57
Atlantic Coast Line	3.26	2.98	1.64	1.40
Central of Georgia	2.37	2.33	2.33	2.28
Charleston & Western Carolina	3.12	2.76	1.72	1.39
Cin., New Orleans & Tex. Pac.	$2.13	$2.03	$1.81	$1.75
Clinchfield	1.68	1.37	1.68	1.37
Columbus & Greenville	2.69	2.62	1.55	1.55
Georgia	3.54	3.36	1.66	1.52
Georgia & Florida	3.37	3.13	1.73	1.58
Georgia, Southern & Florida	4.23	4.15	2.14	2.04
Gulf & Ship Island	3.45	3.29	1.53	1.40
Gulf, Mobile & Northern	2.05	1.92	1.29	1.21
Illinois Central Lines	1.91	1.86	1.72	1.66
Louisville & Nashville	1.74	1.61	1.74	1.61
Mississippi Central	2.91	2.81	1.35	1.29
Mobile & Ohio	1.92	1.87	1.92	1.87
Nashville, Chat. & St. Louis	2.08	1.98	2.01	1.91
New Orleans & Northeastern	3.57	3.39	1.81	1.69
Norfolk Southern	3.32	3.04	1.57	1.29
Northern Alabama	1.86	1.80	1.86	1.80
Seaboard Air Line	2.81	2.39	1.72	1.25
Southern	1.76	1.61	1.72	1.56
Tennessee Central	1.76	1.71	1.76	1.71
Northwestern Region:				
Chicago & North Western	1.58	1.79	1.58	1.79
Chicago Great Western	2.60	2.52	1.43	1.40
Chicago, Mil., St. Pa. & Pacific	2.06	2.05	2.06	2.05
Chicago, St. Pa., Minn. & Omaha	4.05	3.80	3.07	3.30
Duluth, Missabe & Northern	3.88	3.96	3.75	3.96
Duluth, South Shore & Atlantic	4.43	4.06	4.39	4.03
Duluth, Winnipeg & Pacific	4.34	3.75	4.05	3.47
Great Northern	3.30	3.01	3.30	3.01
Green Bay & Western	4.48	3.84	4.48	3.84
Lake Superior & Ishpeming	4.70	3.87	4.70	3.87
Minneapolis & St. Louis	1.99	2.13	1.98	2.11
Minn., St. Pa. & Sault Ste. Marie	3.48	3.33	3.00	2.90
Northern Pacific	2.12	2.20	2.12	2.20
Oregon-Washington Navigation Co.	2.43	2.64	2.43	2.53
Spokane International	4.58	5.20	2.88	3.33
Central Western Region:				
Alton	1.78	1.85	1.77	1.82
Atchison, Topeka & Santa Fe	2.58	2.53	2.57	2.52
Chicago, Burlington & Quincy	1.63	1.68	1.57	1.62
Chicago, Rock Island & Pacific Lines	2.18	2.13	2.04	2.00
Colorado & Southern	2.51	2.32	2.45	2.26
Denver & Rio Grande Western	1.82	1.78	1.82	1.78
Denver & Salt Lake	1.28	1.11	1.28	1.11
Fort Worth & Denver City	4.62	4.33	2.41	2.28
Los Angeles & Salt Lake	3.50	...	3.50	...
Nevada Northern	4.58	4.52	1.75	1.72
Oregon Short Line	2.65	2.65	2.47	2.45
St. Joseph & Grand Island	3.37	3.13	2.99	2.76
Southern Pacific (Pacific lines)	3.04	3.03	3.04	3.03
Toledo, Peoria & Western	1.55	1.50	1.55	1.50
Union Pacific	2.40	2.37	2.40	2.37
Utah	1.26	1.16	1.26	1.16
Western Pacific	3.20	3.16	2.00	1.94
Southwestern Region:				
Fort Smith & Western	2.51	2.70	2.51	2.70
Kansas City Southern	2.04	1.97	2.04	1.97
Kansas, Oklahoma & Gulf	1.91	1.90	1.55	1.53
Midland Valley	1.51	1.49	1.51	1.49
Missouri & North Arkansas	2.41	2.59	2.01	2.22
Missouri-Kansas-Texas Lines	2.65	2.53	2.39	2.37
Missouri Pacific	1.71	1.66	1.71	1.66
Oklahoma City-Ada-Atoka	2.31	2.28	1.91	1.88
St. Louis-San Francisco	2.02	1.94	1.97	1.87
St. Louis Southwestern	2.06	2.11	1.37	1.36

Railroad scrap ..... Rails for rerolling; Culvert, corrugated, ‡1 by 6 by 0 B&B siding, ‡2 by 6 by 18 B&B siding, §6 by 6 sel. com. rgh. 16-in. by 32-ft., or less.



Average Regional Cost per Ton of Coal to Railroads, Freight Included

has generally increased, two roads of eight paying $2 a ton more than a year ago, and the average increase over 1934 amounting to 50 cents. Steel culvert pipe prices, in so far as the trend of several grades can be determined, were stabilized all year but they averaged slightly higher than in 1934.

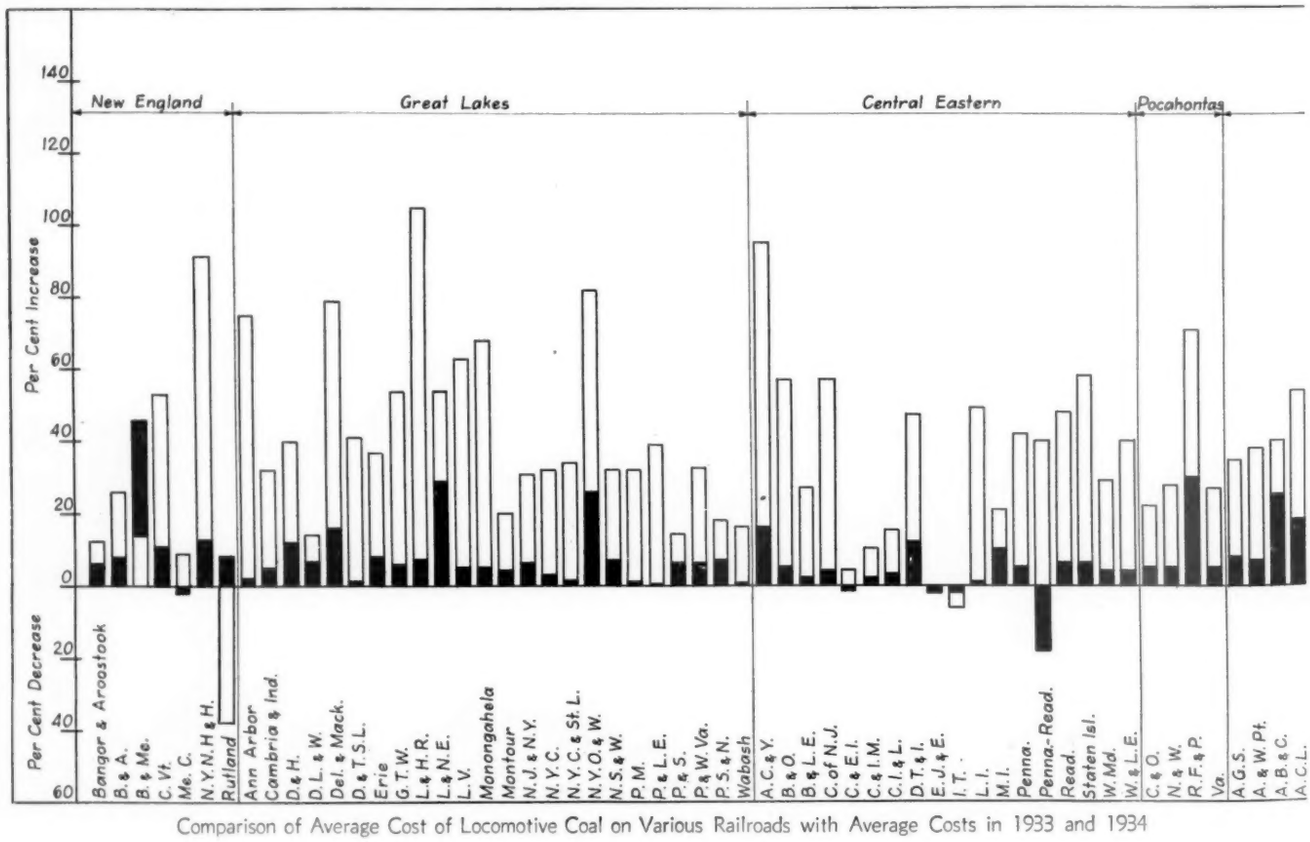
Four of a dozen roads are paying less for machine bolts now than last January and five are paying 20 cents per 100 pieces more, but the year's average of $4.12 per 100 is 10 per cent under 1934. Boiler tubes, ranging from 15.2 cents to 18.4 cents a lin. ft. at present, are practically unchanged from 1934. Bar steel is generally up 5 per cent from a year ago, and the average price of $2.00 per cwt. on twelve roads is 12 cents above the 1934 average. Tool steel prices have not changed for three years. Boiler steel has not changed more than a cent or two per cwt. During the past year, spring steel advanced from 3 cents to 8 cents per cwt. on roads where any fluctuations occurred. One road paid 50 cents less per cwt. in October for sheet iron than at this time a year ago; but in all other instances noted, variations were negligible.

The price of freight car brake shoes, Type D, amounting to $35 and $34 a ton, and those of locomotive shoes, amounting to $55 and $60 a ton, were unchanged from 1934. Grey iron castings, now being purchased at prices ranging from $3.20 to $4.43 a ton on different roads, remained the same throughout the year with one exception, and the year's average of $3.91 a ton was unchanged from 1934. Malleable castings, ranging from $5.10 to $9.15 a ton on different roads, were stationary all year; but there appears to have been a reduction in the yearly average of 4 per cent. There was also a slight reduction in the average cost of steel castings, but the prices were uniform all year. There has been some shifting in the type of couplers used by railroads. However, prices of $40.20, $42.25 and $46.80 a pair remained unchanged from 1934.

Wheels and Axles

There was a definite change in axle values. Present prices for locomotive axles, ranging from $4.65 to $5.90 a ton on twelve roads, show a 15 per cent rise since a year ago, and produce a year's average about 5 per cent above the previous year; while a corresponding advance occurred in car axles, which ranged from $2.65 to $3.60 a ton. Six of twelve roads paid 2 cents per cwt. more for tires last October than in January, and the average shows about the same increase over 1934. The only change in car wheel costs is attributed to the sales tax, causing more railroads to adopt the practice of paying only the spread between the value of new wheels and the value allowed for scrap wheels. This spread ranged from 90 cents to $1.10 per cwt. all year as compared with $1.40 per cwt. for new wheels.

Wire nails, ranging from $2.40 to $3.46 per cwt. at present, show a general decline from a year ago, although the average for the year is slightly above 1934.



Comparison of Average Cost of Locomotive Coal on Various Railroads with Average Costs in 1933 and 1934

Sheet steel is virtually unchanged, while the price of steel rails, fixed at $36.375 a net ton, continues unchanged.

The forecast of nine roads for the present year stands three for unchanged prices and six for slightly higher prices for iron and steel products, the outlook for higher prices being based on negotiations for a seven-hour working day in the mills as well as increases in consumption.

$10,000,000 More from Scrap

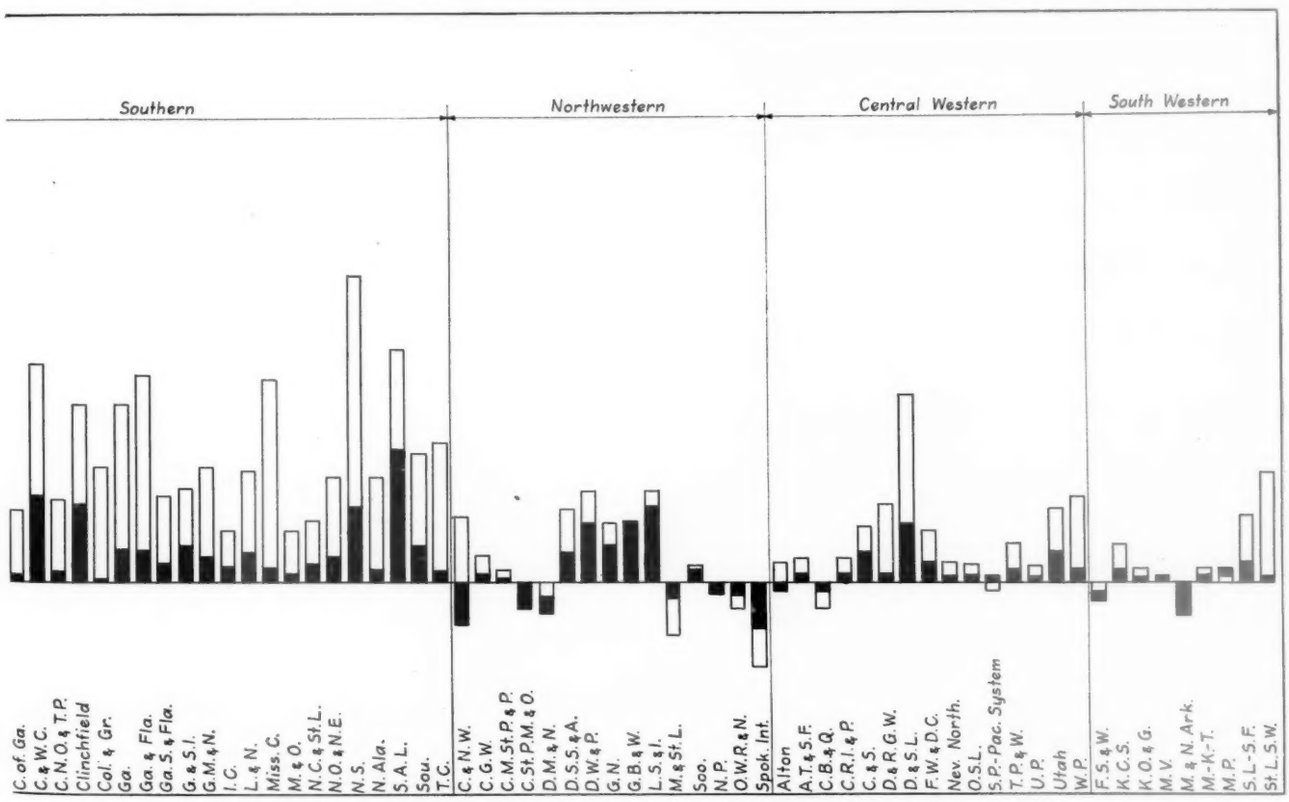
In disposing of the scrap metals produced by the wear and tear on track and equipment and by locomotive and car retirement programs, the railroads play the role of sellers. The shoe is on the other foot, and the higher the prices, the better the carriers like it. This is to be expected from the fact that they produce approximately 20 per cent of the scrap consumed by the iron and steel industry and received over $26,000,000 for their tonnage in the lean year of 1933. Scrap prices also materially affect stock turn-over and car maintenance accounts. The subject is so important that the facilities and methods by which they handle and dispose of their output (amounting to 15 million tons in the five years 1929-1933), and the expenses and income involved were investigated by the Federal Co-ordinator of Transportation last year and a detailed statistical analysis with recommendations were made available to the roads last June.

Although a considerable difference exists between the prices available for scrap to the railroads in different sections of the country (the differences exceed those in the prices paid for new metals), the demand is vastly improved and prices are everywhere higher than they have been in several years for all of the many forms of scrap which railroads prepare. Prices for No. 1 heavy melting steel increased from $3 a ton three years ago and $7.25 a ton last year to $7.55 for one road; from $4.85 a ton three years ago and $7.70 last year to $9.60 for another road; from $5.40 three years ago and $10 last year to $10.75 for still another road and from $8.75 three years ago and $9.32 last year to $11 on another road. No. 1 railroad wrought has advanced from $6.50 three years ago and $6 last year to $8.50 for one road; from $7.50 three years ago and $5.47 last year to $8.60 on another road; and from $7.35 three years ago and $8.50 last year to $10.75 on a third road. Scrap rail has advanced from $6.25 three years ago and $6.25 last year to $8.04 on one road; from $7.50 three years ago and $8.20 last year to $9.50 on another road; from $8 three years ago and $10 last year to $10.30 and $12 on two other roads; and from $10.75 three years ago and $11.60 last year to $13.35 on another road. It is roughly estimated that gross sales last year brought in at least $10,000,000 more than they did in 1933.

There were some reductions last summer but the prices offered for different varieties of scrap have been increasing since October, and the demand both for domestic and foreign consumption, while still lacking continuity, has caused the roads to clean up tonnage that has been awaiting disposition for long periods. With two exceptions out of nine reports, definitely higher prices for scrap are forecasted during the next twelve months. This prospect, affording, as it does, an escape from heavy charges to operating expenses when retiring equipment by increasing the income from salvage, is one additional factor in opening the way to purchasing new equipment.

Lumber Costs Rising

Railroads purchased their lumber requirements last year for less in the aggregate than in 1934, but exceptions were many and rising costs have been the rule since June. This trend is a reversal of the situation a year ago when prices declined during the last six months and is the result of increased lumber consumption, at least for some grades. In the South, where half of the production comes from small mills more or less indif-



The Increases Are More Pronounced in the East Than the West—Freight Charges Included

ferent, if not antagonistic, to the policies of trade associations which have no mandatory powers, increases in lumber prices obtained under the N.R.A. lumber code were, with the exception of cypress, largely lost with the collapse of that experiment of the government in controlling forest products. Stocks of lumber, especially for cars, have been scant, however, and the effect of a sustained demand for building materials since last fall, on top of an improvement in the export situation, was to raise logs $4.50 per M, and even to encourage large mills to reject railroad orders sought to be placed at prices prevailing during the summer.

On the West coast, where most of the lumber consumed in the country is now produced, lumber production was not only disturbed by the collapse of the lumber code in 1934, but received a second jolt early this year when a labor war closed mills for several weeks. Since that time, operations have been active, and, despite the competition between large and small mills, prices have advanced, with the exception of structural timbers. Logs were increased $3 per M ft. in November and railroads have been having difficulty in getting their orders for clear lumber filled, even at the increased prices. This is both because the producers have not had sufficient orders to take care of the timber and common lumber which would be produced when cutting clear lumber, and also because of the increasing degree to which buyers of all classes are calling for kiln-dried or air-dried stock and for such refinements as eased edges and exact lengths. While costs of lumber to all roads appear to have averaged less for the year than in 1934, 14 representative items of railway lumber ranged from 7 per cent less to 40 per cent higher on the West coast in November, and averaged 15 per cent higher than in November, 1934. The comparative values per M.B.M. are as follows:

	November 1934	November 1935
Select cross ties	$12.50	$12.00
Select switch ties	13.50	12.00
No. 1 railroad timbers	13.50	14.00
Close grain select timbers	15.50	15.50
Structural stringers	20.00	18.00
1-in. by 4-in. by 9-ft. VG kiln-dried car siding	35.00	50.00
1-in. by 4-in. by 10-ft. FG kiln-dried car siding	27.00	32.00
1-in. by 6-in. by 18-ft. select boards	17.00	24.00
1-in. by 6-in. VG select running boards	32.00	35.00
2-in. by 6-in. by 10-ft. FG select decking	16.00	19.00
2-in. by 6-in. by 10-ft. VG select decking	25.00	33.00
Select framing	15.50	17.00
Clear framing	31.50	40.00
41-ft. select sills	22.00	21.00

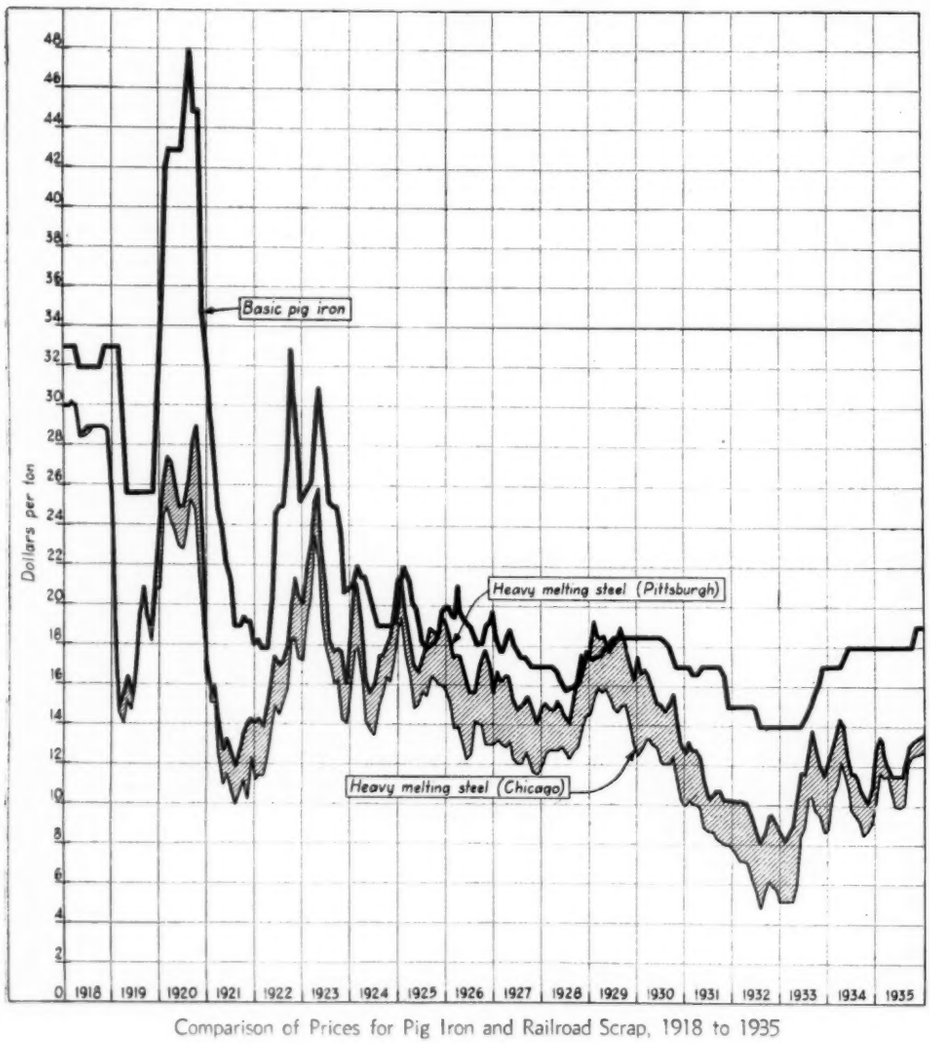
More Lumber from Canada

Lumber operations in British Columbia, always interesting because of their proximity to similar operations in Oregon and Washington, loomed larger in importance last year with the lifting of embargos on imports to the states and the inclusion of lumber in the recent treaty-reducing tariffs on 700 commodities involved in our trade with Canada. Compared with 1934, the situation up to last May was decidedly to the advantage of buyers, with trouble in China and a Japanese embargo disturbing British Columbia's export trade, and combining with the sluggishness of domestic trade to weaken, if anything, prices which were established early in 1934 when timber prices averaged $16.50 per M.B.M. Then came the trouble in Oregon and Washington, which increased shipments for American consumption, notwithstanding a $4 duty, from 2 million ft. in the first four months of last year to 55 million ft. in the succeeding four-months period, of which 30 million ft. were shipped by rail.

With this came large orders from Canadian car companies. Orders totalling 130 million ft. from Australia were larger, orders for 420 million ft. from the United Kingdom were almost equal to the previous year's volume, and orders for 22 million ft. from Africa were equal to the 1934 business. This volume, while imperfectly balanced with timber orders, raised railway car decking prices from $15 to $20 per M.B.M., car sheathing from $21 to $28 per M.B.M. and car framing from $13 to $18 per M.B.M., with proportionately higher prices on commercial sizes, and has prepared that section of the continent to share in the increased business expected this year.

While five of nine roads forecast no change in their purchases of lumber this year, the general feeling is more strongly for both increased consumption and further increases in prices, at least for quality materials and prompt deliveries.

Early predictions of the trend in cross tie costs are precarious



Comparison of Prices for Pig Iron and Railroad Scrap, 1918 to 1935

because ties are produced under such a variety of conditions and degrees of processing involve long-term contracts or prices often established by the railroads themselves, and by the lack of uniformity among the roads in their adherence to published specifications. One road, where ties were obtained from commercial firms, paid 51 cents for pine ties this year, compared with 47 cents in 1934; another road paid 73 cents, as compared with 71 cents in 1934; another road paid $1.15 in October for white oak ties, compared with $1.10 in 1934; while another road paid 10 per cent more than in 1934 for its gum, pine, red oak and white oak.

Lubricants purchased by railroads showed no fluctuation throughout last year and were unchanged from the year previous. This is especially true of grease, which cost different roads from 9 cents to 12 cents a lb. last year. It is also true of car oil, except where adjustments appear to have been made in specifications which reduced the year's average of nine roads from 1.36 cents a gal. in 1934 to 1.30 cents last year. Wiping waste, which different roads now purchase at prices ranging from 5.2 cents to 8.0 cents a lb., while showing an average increase of 12 per cent over a year ago, is 12 per cent below the average for 1934. With illuminating oil, pres-

Average Cost Per Gallon of Fuel Oil for Locomotives—Class I Railroads*

	1924 Cents	1925 Cents	1926 Cents	1927 Cents	1928 Cents	1929 Cents	1930 Cents	1931 Cents	1932 Cents	1933 Cents	1934 Cents	1935‡ Cents
Great Lakes Region.....	5.83	5.98	5.81	5.86	3.81	3.51	4.19	3.90	2.95	3.15	4.68	3.91
Central Eastern Region...					4.17	4.07	3.67	3.54	3.21	3.55	4.20	4.10
Eastern District.....	5.83	5.98	5.81	5.86	3.84	3.55	4.13	3.87	2.97	3.19	4.66	3.95
Southern Region.....	3.57	3.96	3.97	3.97	2.98	2.37	2.21	1.85	1.32	1.64	2.41	2.33
Southern District.....	3.57	3.96	3.97	3.97	2.98	2.37	2.21	1.85	1.32	1.64	2.41	2.33
Northwestern Region.....	2.86	3.32	3.01	3.00	2.94	2.71	2.49	2.12	1.90	1.80	1.97	2.09
Central Western Region..	2.98	3.23	2.72	2.54	2.37	2.10	1.97	1.82	1.69	1.57	1.70	1.94
Southwestern Region.....	2.44	2.85	3.14	3.03	2.46	1.98	1.89	1.59	1.26	1.07	1.33	1.56
Western District.....	2.75	3.09	2.91	2.78	2.47	2.12	1.99	1.76	1.54	1.40	1.60	1.85
United States.....	2.78	3.13	2.95	2.81	2.48	2.12	2.00	1.77	1.55	1.41	1.62	1.86

* Invoice plus freight charges I. C. C.
‡ 10 months.

However, tie costs were generally unchanged from the 1934 values, and some roads paid enough less to reduce average costs in the aggregate below those of 1934. Sawed ties produced on the West coast were available for $12 per M.B.M. last November, as compared with $12.50 in November, 1934. Tie prices have changed much less than have lumber costs in recent years, although the price of 25 cents, at which some roads bought ties in 1932, is now conspicuous by its absence.

In the hardwood territory, where railroads must still compete with the relief activities of the state and federal governments for the labor of tie hewers who once cut ties to get their bread and butter, it has been necessary for some railroads in the East and Central West to increase their prices recently to obtain their requirements, and to anticipate increases up to 25 per cent this year. Despite forecasts for larger tie buying this year, however, and the fair success of commercial firms in controlling their stocks, ties are too plentiful to give most railroads much concern over prices, and it is significant that eight of nine roads forecast either no change in their cost this year or slight reductions.

Prices now being paid for creosote oil for treating timber vary from 7.9 cents to 13.0 cents a gal. and show an increase during the past year on but three of eight roads, while the year's average of 11.6 cents is 7 per cent over the corresponding average of 1934. The effect of this is to increase the cost of ties to the railroads.

Lead and Copper Up

Non-ferrous metals are now mostly higher than a year ago, and the average cost for the year is higher. Sheet copper, ranging from 16.3 cents to 28.5 cents a lb. on nine roads at present, averaged 18.7 cents on nine roads as compared with 17.0 cents a year ago, and the year's average of 20.6 cents is compared to 18.4 cents in 1934. However, copper wire, ranging from 13.5 cents to 14.4 cents a lb. at present, averaged 14.1 cents for the year as compared with 13.8 cents in 1934; and journal bearings fluctuated slightly during the year, averaging 9.6 cents a lb. as compared with 9.4 cents in 1934. On the other hand, lead, ranging from 4.2 cents a lb. to 6.6 cents at present, is 23 per cent higher than a year ago, and the average cost of 4.44 cents for the year is contrasted with 4.21 cents in 1934.

ent prices, ranging from 3.2 cents to 8.0 cents a gal., show slight increases on three of five roads and reductions on four roads from a year ago, with the all-year average of 5.2 cents showing a 5 per cent reduction under 1934.

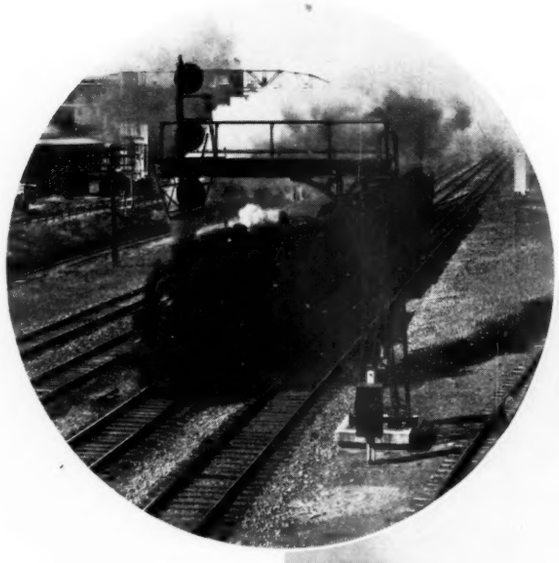
Oxygen Lower—Cement Higher

Oxygen is now being purchased by different roads at prices varying from 69 cents to $1.10 per 100 cu. ft., and averaging $1.04 to nine roads, compared with $1.10 a year ago. The year's average of $1.06 is 4 per cent under the average paid by the same roads in 1934. While cement was unchanged during the year on four of nine roads and lower on one road, the prices, varying at present from $1.85 to $2.48 a bbl., indicate an all-year average of $2.15 a bbl., which is 10 per cent above the average in 1934.

One road of nine paid 18.0 cents for boiler lagging last year compared with $1.20 in 1934, but, with this exception, prices were unchanged and uniform for two years. Fire brick, varying from $40 a ton to $47.75 at present, were increased slightly from a year ago on three of nine roads, but two roads of nine bought last year at prices below 1934. Two roads of nine are now paying 4 cents less for air brake hose than a year ago but the year's average is 4 per cent above 1934. Leather, ranging from 7.3 cents to 14.4 cents a ft., was unchanged all year but the average is slightly below 1934. On the other hand, manila rope is now costing most roads more than a year ago, although the year's average of nine comparable roads is 6 per cent below 1934. Rubber was constant all year at prices ranging from 11 cents to 15.3 cents a lb., and averaging 6 per cent below 1934. Glass is now costing some roads more and other roads less than a year ago, with the year's average 10 per cent under that for the year 1934.

This mixed condition also applied to linseed oil but the present average of 9 cents a lb. is 6 per cent over 1934. There was no fluctuation last year in white lead prices, but the average is also a shade higher than in 1934. Chemicals for water treatment, which are used in large quantities by the railroads, are also practically unchanged for 1934, although at present four of nine roads are paying from 20 cents to 50 cents a ton more for hydrated lime.

Signaling Construction Increased During 1935



A Large Interlocking Was Installed on the New York Central Near Syracuse, N. Y.

About 24 per cent more equipment was placed in service than in previous year—Good prospects for increased activity in this field for 1936

By John H. Dunn
Signaling Editor

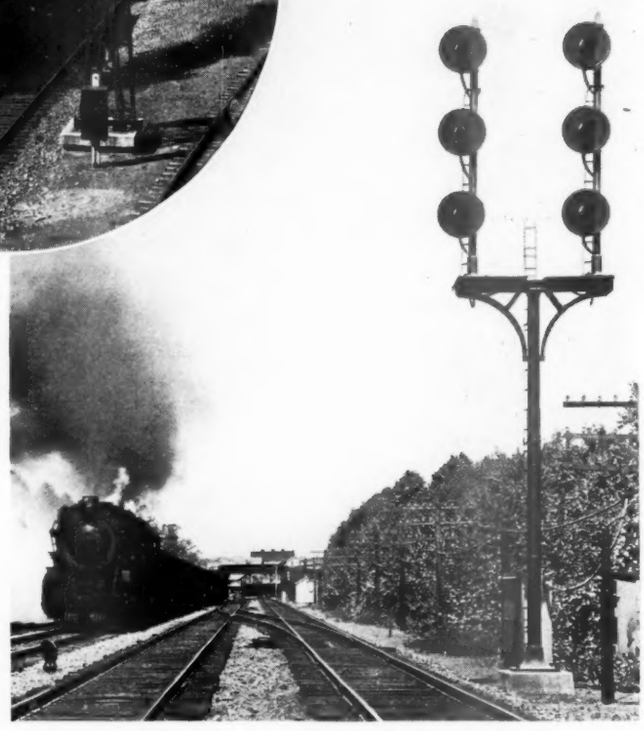
THE volume of signaling construction in the United States and Canada increased 24 per cent in 1935, the number of units of equipment placed in service totaling 3,121, as compared with 2,507 during 1934. Although the 1935 figure was larger than for any recent year it was still far short of normal, as is shown by the fact that 16,223 units were placed in service in 1929 and 17,499 units in 1930.

Signaling has now progressed to a stage where statistics showing new mileage of automatic block and levers of interlockings installed no longer present an accurate picture of the materials used, because the replacement of obsolete apparatus, the respacing of signaling, the addition of aspects and the consolidation of interlockings have become such an important part of signal construction activities. For this reason the *Railway Age* has, for the last seven years, employed a system of units for comparing the volume of signaling construction, in which one unit is assigned for each new automatic block signal, each lever of interlocking, each highway crossing signal, each spring switch, etc. Although this system does not give a true picture of the money value of equipment installed, it does form a basis for comparing the total amount of equipment of different classes placed in service each year. In brief, the major items of equipment placed in service during 1935 included the following units: Automatic signals, 749; crossing signals, 1,252; interlocking levers, 468; signals at remote and centralized control as well as at automatic plants, 248; and spring switches, 79. The outstanding increases over 1934 were in crossing protection and spring switches.

Much of the signaling construction and reconstruction during the past year was done to facilitate train movements and provide adequate safety in territories where train speeds are being increased, as for example, on the Chicago & North Western where the old signaling between Chicago and Milwaukee was replaced with new

Comparison of Annual Signaling Construction

Types of Equipment	Number of Units Completed				
	1931	1932	1933	1934	1935
Automatic Block Signals	3,501	617	1,189	372	749
Highway Crossing Signals	2,368	879	1,010	768	1,252
Levers of Interlocking	2,701	611	782	307	468
Levers Added at Rebuilt Plants	162	124	106	433	182
Levers of Remote and Centralized Control	653	93	159	141	93
Power-Operated Switches in Remote and Centralized Control	412	63	67	89	50
Signals Controlled in Remote and Centralized Control	883	139	228	198	124
Signals in Automatic Interlockings	410	251	134	152	124
Spring Switches	122	57	42	47	79
Number of Retarders	41	3	3	..	..
Power Switches in Retarder Yards	96	..	..	..	..
Total	11,349	2,837	3,720	2,507	3,121



Centralized Traffic Control Was Installed on the Pittsburgh & Lake Erie Near Pittsburgh, Pa.

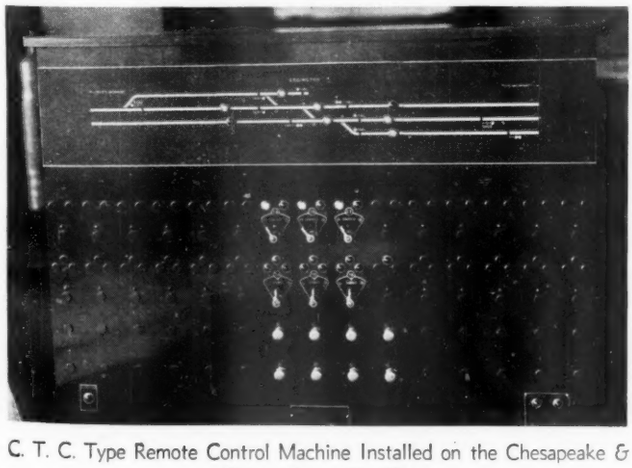
color-type signals, using multiple aspects where the volume of traffic required close spacing between following trains. Also, faster train speeds and an increase in highway traffic have emphasized the need for more and better automatic protection at highway-railroad crossings,

Automatic Block Signals Completed During 1935

Road	Location	Miles of Road	No. of Signals	Manufacturer
B. of T.:				
City of N. Y.	W. 4th St., N. Y., to Concord	1.1f	101c	G.R.S.
		1.8d	..	.....
	Court St., N. Y., to Rockaway	3.5f	150c	G.R.S.
		1.0d	..	.....
	Bergen St., N. Y., to Fulton	0.9d	30c	G.R.S.
B. & M.	Rosemont, Mass., to Plaistow, N. H.*	4.3s	3s	.....
	Powwow River, N. H., to Exeter*	5.2s	4s	.....
	East Kingston, N. H., to Exeter*	2.6s	2s	.....
	Greylock, Mass., to Pownal, Vt.*	4.8s	3s	.....
	Blackinton, Mass., to Williamstown*	2.7s	2s	.....
	Salisbury, Mass., to Portsmouth, N. H.†	16.6s	15s	.....
		0.8d	1c	.....
C. N.				
G. T. W.	Grand Rapids, Mich.	3.0s	3c	Union
C. & O.	Norge, Va., to Elko	26.0d	37c	Union
	Tuckahoe, W. Va., to White Sulphur	3.0d	4c	Union
	Hinton, W. Va., to Quinnimont	16.0d	24c	Union
	Gauley, W. Va., to Kanawha Falls	3.0d	4c	Union
	St. Albans, W. Va., to Teays	9.0d	15c	Union
C. & N. W.	Wilmette, Ill., to Waukegan	22.0d	3s	G.R.S.
		..	37c	.....
	Ill.-Wis. State Line to St. Francis, Wis.	34.0d	48c	G.R.S.
	Milwaukee, Wis., to Folsom Place	3.0d	6c	G.R.S.
D. L. & W.	Portland, Pa.	0.1s	2c	Union
		0.1d	..	.....
	Binghamton, N. Y.	0.5s	..	Union
G. N.	Glasgow, Mont.	1.0s	4c	G.R.S.
I. T.	Springfield, Ill.	2.0s	2c	Union
M. P.	Shannon, Kan., to Union, Neb.	110.0s	176c	G.R.S.
	Flinton, Ill., to Roots	3.0s	2s	G.R.S.
N. O. P. B.‡	New Orleans	..	13c	Union
N. Y. C.	Salina, N. Y., to Syracuse Jct.	4.0f	16c	G.R.S.
B. & A.	Jamesville, Mass., to Charlton†	9.3s	8c	G.R.S.
N. Y. O. & W.	Mayfield Yard, Pa., to Olyphant	3.2d	6c	Union
N. & W.	Raitt Tunnel, Va.	0.9s	2s	Union
S. P.	San Jose, Cal., to Lick	5.1s	15c	Union
		2.1d	..	.....
T. & N. O.	Cuero, Tex., to River Jct.	3.6s	3s	Union
T. H. & B.	Hamilton, Ont.	1.0d	8c	G.R.S.
		174.7s	39s	
		126.9d	710c	
		8.6f	..	
		310.2	749	

Legend:
In "Miles of Road" column: s = single track, d = double track, f = four tracks.
In "No. of Signals" column: s = semaphore, c = colorlight.
* Rearrangement of signals or addition of new colorlight signals on one track of double track in existing automatic territory.
† Double-track automatic block territory converted into single track.
‡ N. O. P. B. = New Orleans Public Belt.

as well as for improved types of control circuits to reduce the delay to motor traffic when slow-speed trains are approaching or have stopped in the control sections. The year 1935 also saw many changes in interlocking, made not only to facilitate train movements but also to reduce operating expenses. In numerous instances small manually-operated interlockings have been replaced by



C. T. C. Type Remote Control Machine Installed on the Chesapeake & Ohio at Limeville, Ky.

power equipment controlled automatically or by remote control apparatus from an existing office or tower located, in some instances, several miles away.

Automatic Signaling in 1935

Automatic block signaling was installed on 310 miles of road with 463 miles of track during 1935, an increase

A Spring Switch With Facing Point Lock at End of Double Track on the Chicago Great Western

of 146 miles over that for the previous year. The more important installations were in the nature of replacements of obsolete apparatus.

The C. & N. W. replaced disk-type signals with color signals on 59 miles of double track between Highland Park, Ill., and Milwaukee, Wis., to increase track capacity and provide for the operation of the "400" and other trains on faster schedules. Features of this project were the relocation of signals to provide adequate braking distance for high train speeds and the use of four-aspects in heavy traffic zones to secure braking distance with blocks shorter than braking distance. The searchlight signals also provided increased sighting range, as

Automatic Interlockings Completed During 1935

Road	Location	No. of Tracks on Reporting Road	No. of Tracks on Other Road	No. of Signals	Manufacturer
A. T. & S. F.	Sterling, Kans.	1	1	4	Union
C. N.	Coniston, Ont.	1	1	8	.....
	Lachevrotiere, Que.	1	1	8	.....
C. & E. I.	Princeton, Ind.	1	1	5	.....
C. G. W.	Wilkinson, Ill.	1	1	5	Union
C. M. St. P. & P.	Forest Jct., Wis.	1	1	5	Union
G. N.	Lurgan, N. D.*	1	1	8	.....
L. S. & I.	Eagle Mills, Mich.	1	1	8	G.R.S.
L. & N.	Birmingham, Ala.	2	1	6	.....
M. P.	Hiawatha, Kans.	1	1	9	G.R.S.
	Nebraska City, Neb.	1	1	7	G.R.S.
M. & O.	Percy, Ill.	1	1	7	.....
P. E.	Riverside, Cal.	1	1	8	Union
S. A. L.	Savannah, Ga.	1	2	6	.....
S. P.					
T. & N. O.	Paris, Tex.	1	1	14	G.R.S.
T. & P.	LaRosen, La.	1	1	8	G.R.S.
U. P.					
L. A. & S. L.	Riverside, Cal.	1	1	8	Union
Total Plants—17				124	

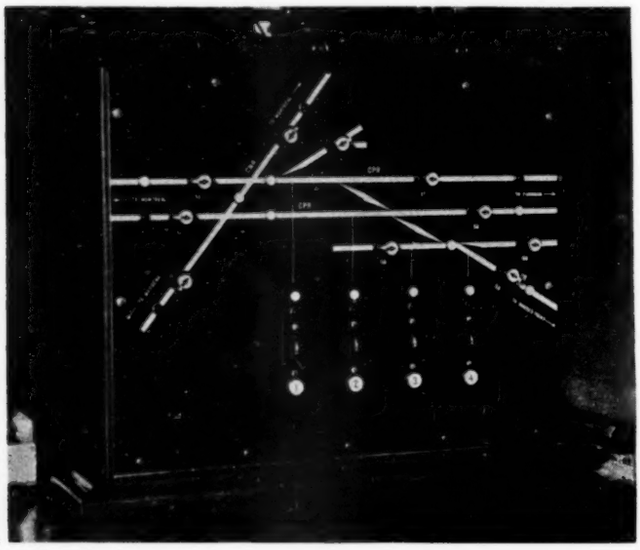
* Four smashboards installed.

compared with the old signals. The most extensive installation of automatic signals completed during the last year was on 110 miles of single-track on the Missouri Pacific, between Shannon, Kan., and Union, Neb., which completes the automatic signaling on the route of the new fast schedule "Marathon" between Kansas City and Omaha.

During the year the Chesapeake & Ohio made several installations of signals, totaling 57 miles of double track,

and the Boston & Maine completed six projects, totaling 36 miles of single and 1 mile of double track. The construction on both of these roads consisted of replacement of obsolete apparatus.

The total of 749 automatic signals installed in 1935 compares with 372 installed during the previous year. Of these 749 signals, 39 were semaphores and 710 colorlight. The limited volume of construction permits no



C. T. C. Type Control Machine at New All-Relay Interlocking on the Canadian Pacific

conclusions to be drawn as to trends in the more general use of different types of equipment or methods of power supply.

Interlocking Gains

The construction of interlockings also increased during 1935, including 20 new plants involving 468 levers, as compared with 18 plants and 307 levers, during the previous year. The largest plant completed was a 63-lever electric interlocking on the New York Central at Syracuse, N. Y., while the Pennsylvania installed a 38-lever electro-pneumatic plant at Newark, N. J., and the Illinois Central installed a 46-lever electric plant at New Orleans, La.

As listed in the table, 20 interlockings were rebuilt, a total of 182 new levers being added. At many of these locations track changes were made to reduce curvature and to install longer turnouts to permit higher train speeds, the layouts being so changed as to necessitate new interlocking machines. The improvements in many instances included the installation of light signals to replace semaphores, the addition of electric locking, etc., so that the finished projects represent practically new interlockings in-so-far as materials and finished installations are concerned.

Automatic Interlockings

During 1935, seventeen automatic interlockings were constructed, involving 124 signals, these projects effecting savings in operating expenses sufficient, in most cases, to liquidate the investment within two to three years. In most instances, as on the Chicago Great Western at Wilkinson, Ill., the new automatic plants replaced manually-operated interlockings, thus eliminating levermen. At other crossings where interlockings were not previously in service, the new automatic plants eliminate train stops and facilitate train movements, thereby increasing average train speeds, as well as saving wear and tear on equipment sufficiently to justify the cost of the interlockings. Based on the experience secured from the plants that are in service, automatic control is gradually being extended to more complicated layouts involving switches as well as one or more crossings. A new plant on the Texas & New Orleans at Paris, Tex., involves crossings of three roads.

Spring Switches Installed During 1935

Road	Location	No. of Spring Switches	Layout End of Double Track, Jct. or Yard	Equipped With Facing Point Lock	Signal for Protection of Switch: No. of High Sig.	Signal for Protection of Switch: No. of Dwarf Sig.
A. T. & S. F.	Emporia, Kan.	1	Yard	..	..	1
	Emporia, Kan.	1	Yard	..	..	1
	LaLande, N. Mex.	1	Yard	..	..	..
	Dunmoor, N. M.	1	Yard	..	..	..
	Willard, N. M.	2	Yard	..	..	..
	Mayfield, Kan.	1	Yard	..	..	..
	Joel, Tex.	1	Yard	..	..	..
	Hereford, Tex.	1	Yard	..	..	..
	Buttes, Colo.	1	Jct.	..	..	..
A. C. L.	Wilmington, N. C.	1	Jct.	..	..	1
	St. Petersburg, Fla.	1	E.D.T.	..	..	..
B. & O.	Cleveland, Ohio	1	Jct.	..	..	1
B. & M.	Newburyport, Mass.*	1	E.D.T.	..	2	2
	Portsmouth, N. H.	1	E.D.T.	..	2	..
C. & O.	Keswick, Va.	1	E.S.	1	..	..
	Shadwell, Va.	1	E.S.	1	..	..
	Fishersville, Va.	1	E.S.	1	..	..
	Ferrol, Va.	1	E.S.	1	..	..
	Goshen, Va.	2	E.S.	2	..	..
	Millboro, Va.	1	E.S.	1	..	..
	Jerrys Run, Va.	1	E.S.	..	..	..
	Dover, Ky.†	2	E.S.	..	..	2
	Garrison, Ky.†	2	E.S.	..	..	2
	Concord, Ky.†	2	E.S.	..	..	2
C. & I. M.	Petersburg, Ill.	1	E.S.	..	..	5
	Andrew, Ill.	1	E.S.	..	..	
	Oakford, Ill.	1	E.S.	..	..	
C. G. W.	Kent, Ill.	1	E.D.T.	1	2	..
C. M. St. P. & P.	Harlowton, Mont.	1	Yard	1	1	..
	Madison, Wis.	1	Yard	..	..	1
	Marquette, Iowa	1	Yard	..	1	..
	Sioux City, Iowa	1	Yard	..	1	..
C. S. S. & S. B.	Bailey Town, Ind.	1	E.S.	..	2	..
	Andry, Ind.	1	E.S.	..	2	..
	South Bend, Ind.	1	E.S.	..	..	..
D. L. & W.	Apulia, N. Y.	1	E.D.T.	..	2	..
E. J. & E.	Cavanaugh, Ind.	1	Jct.	..	..	1
	Normantown, Ill.	1	Yard	..	1	..
	Spaulding, Ill.	1	Yard	..	1	..
	Rondout, Ill.	1	Yard	..	1	..
Erie	River Junction, N. Y.	1	E.S.	1	1	..
G. N.	Glasgow, Mont.‡	1	E.S.	1	1	..
L. V.	Cranberry, Pa.	1	E.D.T.	..	2	2
L. & A.	Minden, La.	1	Yard	..	..	..
L. & N.	Boyles, Ala.	3	Jct.	..	..	..
M. P.	Red Bridge, Mo.	1	E.S.	..	1	..
	Wichita, Kan.	1	E.D.T.	..	1	..
	Union, Neb.	2	E.S.	..	4	..
N. Y. C.	Hoffmans, N. Y.	1	E.D.T.	1	2	..
Penna.	South Amboy, N. J.	1	E.D.T.	1	2	2
	Marysville, Pa.	1	Jct.	1	2	1
	Gum Run, Pa.	1	E.D.T.	1	1	..
	Wilmington, Del.	1	Jct.	1	2	1
	Philadelphia, Pa.	1	Jct.	1	..	2
	Chestnut Hill, Pa.	1	Yard	1	1	4
	Marion, Ohio	1	E.D.T.	1	1	1¶
	Carrothers, Ohio	1	E.D.T.	1	1	1¶
	Bucyrus, Ohio	1	E.S.	1	1	1¶
Reading	Philadelphia, Pa.	2	Xover	2	1	1
St. L.-S. F.	Newburg, Mo.	1	Yard	..	2	..
	Sleeper, Mo.	1	E.D.T.	..	2	1
	Springfield, Mo.	1	Jct.	..	2	..
	Yale, Tenn.	1	Yard	..	..	1
S. D. & A. E.	San Diego, Cal.§	1	Yard	..	..	..
Southern	Jacksonville, Fla.	1	E.D.T.	..	..	..
	Stratton, Ga.	1	E.D.T.	..	..	..
	Stratton, Ga.	1	Jct.	..	..	..
S. P.	Springfield Jct., Ore.	1	Jct.	..	3	..
	Tehama, Cal.	1	Jct.	1	3	..
	San Jose, Cal.	1	Yard	..	3	..
	San Jose, Cal.	1	Yard	..	..	3
	Lick, Cal.	1	E.D.T.	1	2	1
	Hathaway, Cal.	1	E.D.T.	1	1	..
	San Luis Obispo, Cal.	1	Yard	..	2	..
	Santa Barbara, Cal.	1	Yard	..	..	1
T. & N. O.	Cuero, Tex.	1	Jct.	..	1	..
Totals		79		26	63	42

Legend:
E.D.T. = End of double track.
E.S. = End siding.
Xover = Crossover.
* Signals also protect drawbridge.
† Dwarf signals and facing-point locks added to existing spring switches.
‡ Two-color light signals used as switch light, checks position of switch and lock.
§ High switch stand with lamp and double target.
¶ Two aspect colorlight dwarf signal serves purpose equivalent to switch lamp; checks position of switch and lock.

Remote and Centralized Control

In the field of remote and centralized control, construction during 1935 included 17 installations, involving 93 levers, 50 power-operated switches and 124 controlled signals, which totals represent a slight reduction as compared with those for the previous year. The Chesapeake & Ohio made three of these installations, including one project involving a 42-lever machine to control 19 power switches and 42 signals. The C.T.C. installation on the Pittsburgh & Lake Erie, near Pittsburgh, including switches and signals for directing trains in either direction on a section of double-track, was installed in order to increase the track capacity to accommodate trains of the Baltimore & Ohio, which are now operated over this line.

The use of all-relay interlockings, involving miniature non-interlocked levers, which were developed primarily for C.T.C., is becoming accepted practice, especially for the remote control of outlying track layouts, as on the C. & O. at Limeville, Ky. The savings effected by thus replacing manually-operated plants with power apparatus controlled from a remote existing tower are evident, and such combinations of the control of interlockings will, undoubtedly, represent a large portion of the signaling construction for the coming year because a considerable number of such projects have been postponed until conditions improve.

Interlocking Plants Completed During 1935

Road	Location	Manufacturer	Lever Capacity of Frame	Working Levers: Mechanical	Electric	Electro-Pneumatic	Elec.-Mech.: Mech.	Elec.
B. & O.	Chicago, Ill.	Union	16	12	..	..	..	..
B. of T. City of N. Y.	West 4th St., N. Y.	G.R.S.	12	..	10	..	..	..
	Bdway.-Lafayette, N. Y.	G.R.S.	64	..	51	..	..	..
	Delancey St., N. Y.	G.R.S.	24	..	21	..	..	..
	York St., N. Y.	G.R.S.	24	..	21	..	..	..
	Court St., N. Y.	G.R.S.	12	..	9	..	..	..
	Hoyt-Schermerhorn, N.Y.	G.R.S.	24	..	18	..	..	..
	Lafayette Ave., N. Y.	G.R.S.	32	..	24	..	..	..
	Utica Ave., N. Y.	G.R.S.	56	..	50	..	..	..
B. & M.	Newburyport, Mass.*		..	..	..	..	2	..
C. P.	Montreal (Breslay), Que.*		..	..	..	..	8	4
	Montreal (Ballantyne), Que.*		..	4	..	..	..	..
C. & O.	Hilldale, W. Va.*§		..	..	..	..	..	..
	Meadow Creek, W. Va.*	Union	..	..	..	..	..	3
	Norge, Va.*	Union	..	..	..	..	..	..
C. & W. I.	Chicago, Ill.¶	Union	..	..	6	..	..	..
C. B. & Q.	Pacific Jct., Ia.‡	C.B.&Q.	..	..	..	..	..	..
	Tracy, Ia.*	G.R.S.	..	4	..	..	..	..
C. M. St. P. & P.	Black River, Wash.*		..	..	11	..	..	..
Del. Riv. Comm.	Camden, N. J.	Union	39	..	..	27	..	..
Erie	Latimer, Ohio*		..	..	..	..	..	..
I. C.	East Bridge Jct., La.	G.R.S.	..	..	28	..	..	..
	Southport, La.	G.R.S.	..	..	46	..	..	..
N. Y. C.	Salina, N. Y.	G.R.S.	..	..	19	..	..	..
	Syracuse Jct., N. Y.	G.R.S.	..	..	63	..	..	..
	Short Line Jct, Ohio*	G.R.S.	..	..	61†	..	..	..
C.C.C. & St.L.	Delaware (Padget), O.*	Union	..	8	..	..	..	..
	Delaware (Jones), Ohio*	Union	..	6	..	..	..	..
N.Y. N.H. & H.	Woodlawn, R. I.*	Union	..	..	7	..	..	..
N. P.	Longview, Wash.*		..	8	..	..	..	..
	Butte, Mont.*		..	11	..	..	..	..
Penna.	Newark, N. J.	Union	..	..	..	38	..	..
	Wilmington, Del.*	Union	..	..	14	..	..	..
	Wilmington, Del.*	Union	..	..	6	..	..	..
	Great Neck, N. Y.	Union	..	..	5	..	..	..
Reading N. Y. & L. B.	South Amboy, N. J.	Union	..	..	12	..	..	..
	South Amboy, N. J.*	Union	..	1	..	..	..	..
	Raritan, N. J.*	Union	..	3	..	..	..	..
Sac. North.	Sacramento, Cal.	Union	11	..	8	..	..	..
S. P.	College Park, Cal.*	G.R.S.	..	..	21	..	..	..
Totals			..	57	511	65	10	7
Levers (New			..	12	391	65	..	..
Levers (Added			..	45	120	..	10	7

	Plants	Levers
New	20	468
Rebuilt	20	182
		650

Important Projects Practically Completed But Not in Service

B. of T. City of N. Y.	Continental Ave., N. Y.	Union	83	..	..	69	..	..
	Jamaica Yard, N. Y.	Union	91	..	..	78	..	..
	Union Turnpike, N. Y.	Union	43	..	..	38	..	..
	Parsons Blvd., N. Y.	Union	19	..	..	14	..	..
	178th St. (Queens), N. Y.	Union	11	..	..	5	..	..

* Existing plant at which additional levers were added and in many cases entire plant rebuilt.
† New interlocking machine installed.
‡ Manually operated gate and signals installed.
§ Power switches added.
¶ C. T. C. type control machine.

Spring Switches Used Effectively

The installation of spring switches showed a large increase, a total of 79 such projects being completed in 1935, as compared with 47 in 1934. These spring switches are used where the train movements from the turnout to the main line are preponderantly in one direction. Of the installations made in 1935, 25 were at yard switches, 15 at junctions, 17 at ends of double track, 20 at ends of sidings and 2 for a crossover. An important feature of these installations is the fact that mechanical facing-point locks were provided for 26 of the 1935 installations. These locks, a comparatively new development, insure practically the same protection for a main-line switch as is offered by interlocking, eliminating the necessity for reducing train speeds when making main-line movements over the facing point.

A total of 105 signals were installed in connection with the spring switches. Further development was made in the signaling at spring switches during the year. For example, the Pennsylvania uses a small two-unit type signal in place of a switch stand, which has no track circuit control, but is controlled to give a proceed aspect for the main-line route as long as the switch is closed and locked. This practice is somewhat different than that of the Great Northern, where a special lunar-white aspect on a signal at the switch indicates the normal position of the switch and lock.

The use of spring switches in combination with power

Remote and Centralized Control Installations Completed During 1935

Road	Location	Miles of Road	Manufacturer	No. of Levers: Desk Type	C.T.C. Type	Power Operated Switches	No. of Signals Controlled
B. & M.	Newburyport, Mass., to Salisbury	2.1s	.....	2	..	..	5
	North Woburn Jct., Mass., to Wilmington†	1.2s	.....	..	..	..	..
	Northeys Point, Mass., to Beverly†	0.9s	.....	..	..	..	..
C. & O.	Gladstone, Va., to Walkerford	7.0	Union	3	..	..	5
	Jerrys Run, Va., to Tuckahoe	5.0d	Union	..	42	19	42
	DG Cabin, Ky., to Limeville	2.5d	Union	..	6	5	7
C. M. St. P. & P.	LaCrosse, Wis.	...	Union	..	3	1	6
D. L. & W.	Hopatcong, N. J.	0.5d	Union	2‡	..	1	3
L. & N.	Poyles, Ala.	...	.....	..	2	1	4
M. P.	Hiawatha, Kan.	...	G.R.S.	1	..	1	..
I-G. N.	Houston, Tex.	...	G.R.S.	..	..	2	6
Penna.	Duquesne, Pa., to Denny	...	Union	2*	..	2	2
P. M.	Grand Rapids, Mich., to Vine	...	.....	..	..	1	3
P. & L. E.	Wampum, Pa., to West Pittsburgh	6.3d	Union	..	19	16	11
S. P.	San Jose, Cal., to Lick	5.1s 0.3d	Union	11	..	1	16
U. P.	Topeka, Kan.	...	Union	..	..	..	8
	Kansas City, Kan.	...	Union	..	..	..	6
	Totals	9.3s 21.6d		21	72	50	124

Legend:
In "Miles of Road" column: s = single track, d = double track.
* Levers used in existing machines.
† Reverse running provided for on one track of double track.
‡ Present electro-pneumatic interlocking machine located 1.06 miles from remote location.

switches for outlying layouts is also a new development, as for example, near Birmingham, Ala., where the Louisville & Nashville installed three spring switches for switches normally trailed through, remote control being provided for the signals and the one power switch necessary for selecting routes.

Thus, in brief, the changes that are taking place in railroad operating practices and the necessity for reducing operating expenses are forcing the replacement of signal and interlocking facilities with modern apparatus. This program, held to a minimum by financial conditions during 1935, gives promise of increasing materially during the coming year.

During 1935, the principal development in the field of automatic train control and cab signals consisted of installations on several of the high-speed streamlined trains and Diesel locomotives that were placed in service during the year. The speeds at which these trains operate and the new type of braking equipment that has been developed for such service have led to the design of special control apparatus for such trains that differs in many respects from the conventional equipment installed on locomotives heretofore.

The Union Pacific seven-car train, the City of Portland, is provided with composite automatic speed control and cab signal equipment manufactured by the Union Switch & Signal Company to operate over the General Railway Signal Company's continuous two-speed train control installation on the Chicago & North Western between Chicago and Council Bluffs, Iowa; and over the Union's two-indication continuous automatic cab-signal territory on the Union Pacific, between North Platte, Neb., and Cheyenne, Wyo., and over the Union's one-speed continuous train control installation on the Oregon - Washington Railroad & Navigation unit of the Union Pacific between Portland and The Dalles, Ore. Interesting features of this equipment are the speed governor designed especially to minimize weight and the space required for its mounting and a recurrent acknowledgment feature, which operates on a time-interval basis in both train control and cab signal territory.

The Rebel of the Gulf, Mobile & Northern is equipped with General Railway Signal Company intermittent inductive-type automatic train control for operation over that part of the train-stop territory of the New Orleans & North Eastern between Slidell, La., and New Orleans. The equipment has been modified to improve its operation at high speeds, and no brake valve actuator, such as is used on steam locomotives, is provided, the automatic brake application being effected directly by means of the electro-pneumatic valve, which, when deenergized, causes an emergency brake application through the same means employed by the dead-man feature with which the train is equipped. During such an application means are provided to idle the Diesel engine and to open the circuit to the traction motors, these being functions of an automatic train control device required on such trains that have no counterpart on steam locomotives.

Another special type of General Railway Signal Company intermittent inductive automatic train-stop is installed on the Diesel locomotive recently placed in service by the Baltimore & Ohio on its Royal Blue train between Washington and New York. This is a lightweight, non-articulated train which was originally provided with a steam locomotive of special design, but which is now drawn interchangeably by either the Diesel or a steam locomotive. The Diesel locomotive is a double-end unit with an engine and direct-connected generator in each end. Since the locomotive can be operated from either end, the train-stop equipment was also designed to be effective for operation in either direction. Like the equipment on the Rebel, the device has been modified to insure efficient operation at high speeds and to idle the main Diesel engines and open the control of the traction motors, during an automatic brake application, but since the brake equipment on this train is the same as that used on conventional steam trains, a brake valve actuator is mounted on each brake valve to effect the automatic application as on steam locomotives.

A new feature of the equipment on this locomotive is the time-element reset contactor, which, as in other installations, is provided to reset the train-stop equipment after an automatic brake application. Unlike the conventional reset contactor, which is usually mounted where it can be operated only from the ground, this contactor is located in the cab, and is equipped with a clockwork mechanism, which delays the closing of the contact controlling electro-pneumatic valve for a predetermined time interval after the resetting lever has been operated. In this manner the I.C.C. requirement that an automatic brake application may not be released until the train has been brought to a stop, is enforced, without the hazard of requiring a trainman to alight from the cab for the purpose of resetting the equipment. The time during which the electro-pneumatic valve circuit is held open by the clockwork mechanism is sufficient to insure that the train be brought to a stop.

The Diesel locomotive delivered to the Santa Fe was equipped with automatic train control of special design manufactured by the Union Switch & Signal Company for operation over the Santa Fe's three-speed continuous inductive installation.

During 1935 plans and specifications were prepared for an automatic train control installation on the San Francisco-Oakland bridge, now under construction, over the San Francisco Bay. This installation includes the bridge and approaches on either side, and multiple-unit cars of both the Southern Pacific Company and the Key System are to be equipped with a speed control device with automatic cab signals.

Railway Construction in Canada and Mexico

(*Continued from page 56*)

Canadian National

First Track: Line diversion, Shere, B. C., 0.75 mile.

Important Work Undertaken: New passenger station and incidental facilities London, Ont. (to be completed in 1936). Subway to eliminate grade crossing with Highway 25, Burlington, Ont. (to be completed in 1936).

Canadian Pacific

Important Work Undertaken: Extending embankments and raising track to establish new grade in sags, preparatory to ballasting program, Kenora. Ont., and Ingolf, $250,000 (completed).

Newfoundland

Important Work Undertaken: Paper-storage warehouse, 3,500 tons' capacity, St. Johns, Newfoundland, $130,000 (completed).

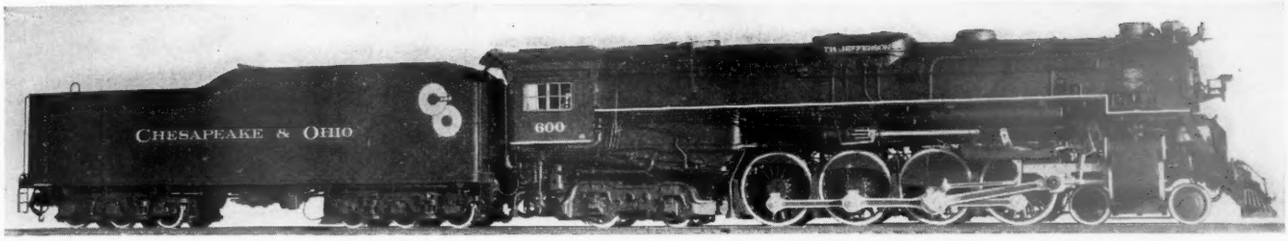
Pacific Great Eastern

First Track: Line diversion, M.P. 318.82 to M.P. 319.29, British Columbia, 0.47 mile. Line diversion, M. P. 326.72 to M. P. 327.41, British Columbia, 0.69 mile.

National Railways of Mexico

New Lines Under Construction: Santa Catarina to Apatzingan, 80.8 miles; first stretch of road projected from Santa Catarina to Zihuatanejo (23 per cent completed). Sarabia to Campeche, 489.7 miles, projected to unite southeastern states (1 per cent completed). Suchil to Las Charcas, narrow gage, 62.1 miles (34 per cent completed). Ixcaquixtla to Chacahua, 279.6 miles (4.5 per cent completed). Line diversion, kms. A-1516 to A-1528, to facilitate crossing of San Pedro river, Meoqui (90 per cent completed).

Important Work Undertaken: Modification and extension of yards and freight warehouse, Buena Vista and Nonoalco stations, Mexico, D. F. (completed).



One of an Order of Five 4-8-4 Type Passenger Locomotives Built by the Lima Locomotive Works for the Chesapeake & Ohio—These Locomotives Have a Tractive Force of 81,035 Lb. and Are Designed to Develop 5,000-Hp.

Locomotives Ordered in 1935

Domestic total of only 83 represents less than half the 1934 business—Standstill broken in Canada

By Walter J. Taft
Associate Editor

LOCOMOTIVES ordered during 1935 for domestic service in the United States totaled only 83—less than half the number ordered during 1934 when 183 were purchased. Thus last year's business, while approximately twice that of 1933 and seven times that of 1932, was nevertheless distressingly low in volume. With the exception of only those two depression years—1932 and 1933—it was the poorest on record in the accompanying Table II which is continuous back to 1901.

Table I—Locomotive Orders in 1935

For service in the United States	83
For export to other countries	15
For service in Canada	27
Grand total	125

The inroads of the depression upon the business of locomotive builders is revealed in dramatic fashion when attention is called to the fact that the total business for the six-year period, 1930 to 1935, as measured by units ordered, has been only 77 per cent of that done in the single year 1929. In other words the 1930-1935 total was 936; that of 1929 was 1,212.

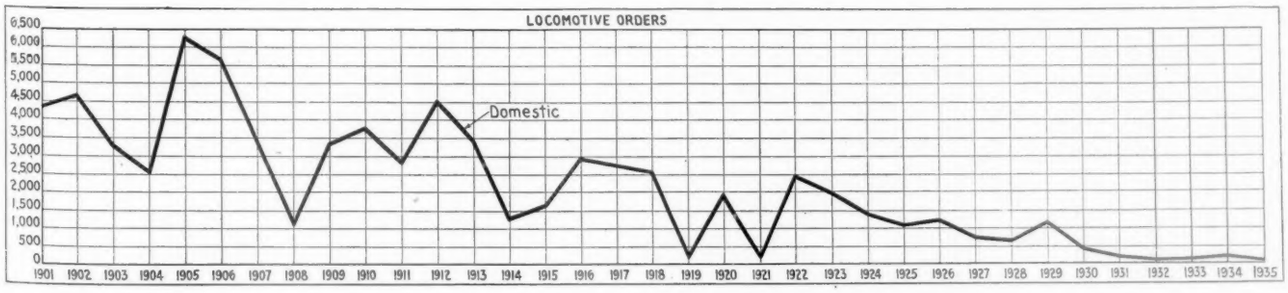
The 1935 orders included 28 steam locomotives, seven electric and 48 of other types, such as Diesel-electric, gasoline-electric, etc. The comparable 1934 figures were 72 steam, 76 electric, and 35 of other types. No outstanding orders were reported last year, the largest being a non-railroad order for 10 Diesel-electrics, placed in May by the Mason, Walsh, Atkinson, Kier Company, which has a contract for work in connection with the construction of the Grand Coulee dam in Washington; this company, in November, ordered four others of the same type, bringing its total purchases for the year to 14.

Table II—Orders for Locomotives Since 1901

Year	Domestic Orders Only. Locomotives	Year	Locomotives
1901	4,340	1908	1,182
1902	4,665	1909	3,350
1903	3,283	1910	3,787
1904	2,538	1911	2,850
1905	6,265	1912	4,515
1906	5,642	1913	3,467
1907	3,482	1914	1,265

Year	Domestic and Foreign Domestic	Canadian	U. S. Export	Total
1915	1,612	...	850	2,462
1916	2,910	...	2,983	5,893
1917	2,704	...	3,438	6,142
1918	2,593	209	2,086	4,888
1919	214	58	898	1,170
1920	1,998	189	718	2,905
1921	239	35	546	820
1922	2,600	68	131	2,799
1923	1,944	82	116	2,142
1924	1,413	71	142	1,626
1925	1,055	10	209	1,274
1926	1,301	61	180	1,542
1927	734	58	54	846
1928	603	98	27	728
1929	1,212	77	106	1,395
1930	440	95	20	555
1931	176	2	28	206
1932	12	1	(Export) 1	14
1933	42	...	7	49
1934	183	...	17	200
1935	83	27	15	125

Prior to 1918, Canadian orders included under "Domestic."



Locomotive Orders From 1901 to 1935

Among the railroads the largest order was that for eight steam locomotives, placed by the Wheeling & Lake Erie in its own shops. Next were the Chesapeake & Ohio and Detroit, Toledo & Ironton orders, respectively for five and four steam locomotives.

Fifteen locomotives—13 steam and two Diesel-electrics—were ordered during 1935 in the United States for export. This compares with the 17 locomotives ordered here during 1934 for export; and with respective 1933 and 1932 figures of seven and one. In 1931 a total of 28 locomotives were ordered here for export.

The complete standstill in Canada was broken last year by the Dominion Government's equipment loans to railways there. Thus Canadian builders reported for 1935 orders for 27 locomotives—the first they have received from the Canadian roads since 1931. There were no locomotives ordered in Canada either in 1934 or in 1933, and in 1932 only one was ordered—that for export.

Locomotives built in 1935 for service in the United States, as distinguished from those ordered, totaled 184 as compared with 91 in 1934 and 57 in 1933. The 1935 total included 44 steam locomotives, 82 electric and 58 of other types. Production in the United States for export during 1935 involved the building of 17 locomotives—15 steam and two Diesel-electric. This compares with

(*Continued on page 82*)

Table III—Locomotives Built in 1935

	United States	Canada	Total
Domestic	184	4	188
Foreign	17	..	17
Total	201	4	205

Comparison with Previous Years

Year	Domestic	Foreign	Total	Year	Domestic	Foreign	Total
1896	866	309	1,175	1913†	4,561	771	5,332
1897	865	386	1,251	1914†	1,962	273	2,235
1898	1,321	554	1,875	1915†	1,250	835	2,085
1899	1,961	514	2,475	1916†	2,708	1,367	4,075
1900	2,648	505	3,153	1917†	2,585	2,861	5,446
1901	....	....	3,384	1918†	3,668	2,807	6,475
1902	....	....	4,070	1919†	2,162	1,110	3,272
1903	....	....	5,152	1920†	2,022	1,650	3,672
1904	....	....	3,441	1921†	1,185	638	1,823
1905*	4,896	595	5,491	1922†	1,303	231	1,534
1906*	6,232	720	6,952	1923†	3,505	280	3,785
1907*	6,564	798	7,362	1924†	1,810	226	2,036
1908*	1,886	456	2,342	1925†	994	291	1,285
1909*	2,596	291	2,887	1926†	1,585	185	1,770
1910*	4,441	314	4,755	1927†	1,009	167	1,176
1911*	3,143	387	3,530	1928†	636	111	747
1912†	4,403	512	4,915				

*Includes Canadian output.
†Includes Canadian output and equipment built in railroad shops.

	United States			Canada			Grand total
	Domestic	Foreign	Total	Domestic	Foreign	Total	
1929	926	139	1,065	96	..	96	1,161
1930	972	51	1,023	111	..	111	1,134
1931	181	17	198	24	..	24	222
1932	102	18	120	2	1	3	123
1933	57	6	63	..	..	..	63
1934	91	19	110	..	..	..	110
1935	184	17	201	4	..	4	205

Locomotive Orders in 1935

For Service in the United States

Purchaser	No.	Type	Service	Weight	Tractive force	Cylinders	Date of order	Date of delivery	Builder
Aliquppa & Southern	1	0-8-0	Sw.	231,800	58,300	25 x 28	May	September	American
Baltimore & Ohio	1	4-6-4	Pass.	352,000	64,100	22½ x 29	June	Jan. '36	Company Shops
Bangor & Aroostook	2	4-8-2	Freight	315,300	60,200†	22½ x 30	June	October	American
Chesapeake & Ohio	5	4-8-4	Pass.	475,000	81,035†	27½ x 30	July	December	Lima
Chicago, Burlington & Quincy	1	4-6-4	Pass.	391,880	59,400†	25 x 28	March	June	Company Shops
Coos Bay Lumber Co.	1	2-8-2	Freight	205,000	.....	20 x 24	September	.....	American
Detroit, Toledo & Ironton	4	2-8-4	Freight	402,000	63,250	25 x 30	September	Dec.-Jan. '36	Lima
Fajardo Development Co.	1	2-8-0	.....	107,000	.....	17 x 22	1935	.....	American
Norfolk & Western	2	2-6-6-4	Freight	590,000	104,500	24 x 30 (4 cyl.)	August	Apr. '36	Company Shops
Northern Illinois Coal Corp.	1	....	Sw.	121,000	26,550	15½ x 14	August	August	Heisler
	1	....	Sw.	110,000	24,375	15 x 12	September	October	Heisler
Pennsylvania	*3	Tenders	.....	.....	.....	.....	1935	1935	Company Shops
	*5	Tenders	.....	.....	.....	.....	1935	1935	Company Shops
Seaboard Air Line	*4	Tenders	.....	.....	.....	.....	March	.....	Baldwin
Wheeling & Lake Erie	8	0-6-0	Sw.	164,900	39,102	21 x 28	February	October	Company Shops

Export

Purchaser	No.	Type	Service	Weight	Tractive force	Cylinders	Date of order	Date of delivery	Builder
E. deF. de Goyaz, Brazil	1	2-6-6-2	Freight	148,000	29,950	14 x 22 (4 cyl.)	July	November	Baldwin
F.C. Nacional de Chiriqui, Panama	1	2-8-0	.....	88,000	.....	16 x 20	November	.....	American
Govt. of Ecuador	1	2-8-0	Fr. & P.	124,200	27,600	18 x 20	May	September	Baldwin
National Railways of Mexico	5	4-8-0	Freight	288,000	55,700	28 x 28	April	Aug.-Sept.	Baldwin
Sorocabana Ry.—Brazil	4	4-10-2	.....	235,000	.....	18½ & 22 x 24 (3 cyl.)	January	.....	American
United Fruit Co.	1	2-8-2	Freight	170,000	29,500	19 x 24	August	December	Baldwin

Canada

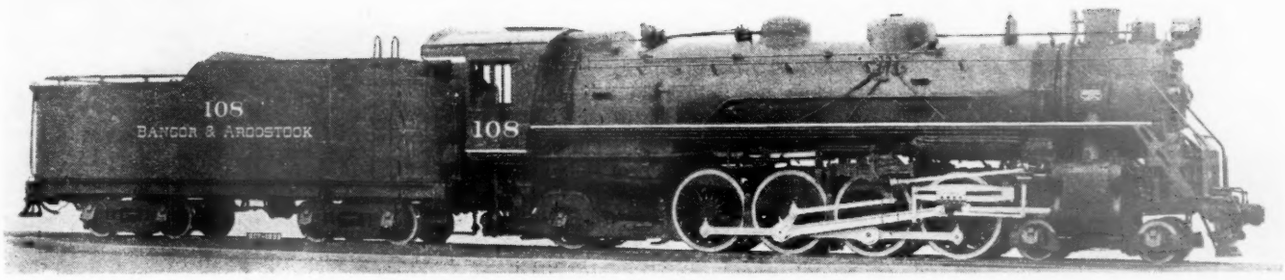
Purchaser	No.	Type	Service	Weight	Tractive force	Cylinders	Date of order	Date of delivery	Builder
Canadian National	5	2-8-2	Freight	337,200	56,200	24 x 30	August	.....	Canadian
	5	4-8-4	Freight	387,000	56,800	25½ x 30	August	.....	Montreal
	5	4-8-4	Pass.	386,000	52,000	24 x 30	August	.....	Montreal
Canadian Pacific	5	4-4-4	Pass.	250,000	25,000	16¾ x 28	November	May '36	Montreal
Dominion Steel & Coal Corp.	1	0-4-0	Sw.	75,000	.....	14 x 22	May	.....	Montreal
Montreal Harbor Commission	3	0-6-0	Sw.	143,000	31,800	20 x 26	July	November	Montreal
Temiskaming & Northern Ontario	2	4-8-4	Pass.	370,000	65,000†	22½ x 30	August	March '36	Canadian Loco.

Electric Locomotives

For Service in the United States

Purchaser	No.	Wheel arrangement	Service	Weight	Horsepower cont. rating	Date of order	Date of delivery	Builder
Jewell Ridge Coal Corp	1	B	.....	40,610	300	January	April	Westinghouse-Baldwin
Jones & Laughlin Steel Corp.	1	B	Sw.	58,700	300	August	December	Westinghouse-Baldwin
Norfolk & Western	1	C	Sw.	90,000	375	March	December	General Electric

* Not included in totals.
† Tractive force including booster.



One of Two Locomotives Built by the American Locomotive Company for the Burlington & Aroostook

Purchaser	No.	Wheel arrangement	Service	Weight	Horsepower cont. rating	Date of order	Date of delivery	Builder
The Pocahontas Corp.	1	B	.....	30,675	200	March	May	Westinghouse-Baldwin
Rail & River Coal Co.	1	C	.....	32,000	150	November	December	Westinghouse-Baldwin
River Seam Coal Co.	1	B	.....	37,550	300	February	April	Westinghouse-Baldwin
United Pocahontas Coal Co.	1	B	.....	29,950	200	June	August	Westinghouse-Baldwin

Diesel-Electric, Gas-Electric or Gasoline Locomotives

For Service in the United States

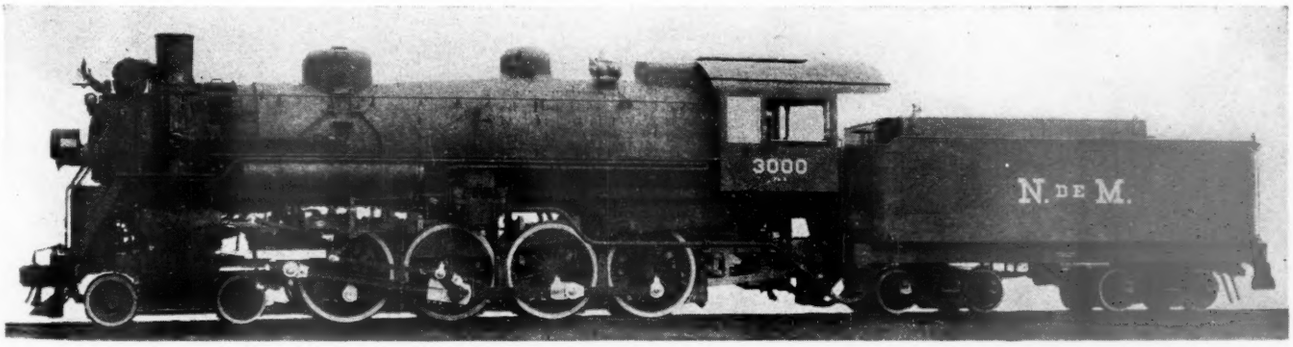
Purchaser	No.	Wheel arrangement	Service	Type	Weight	Horse-power	Date of order	Date of delivery	Builder
Acme Steel Co.	1	B-B	Sw.	Butane-Elec.	130,000	450	February	May	G. E.-Plymouth-Climax
American Rolling Mills Co.	1	B-B	Sw.	Diesel-Elec.	216,000	600	March	June	Gen. Elec.-I. Rand
Atchison, Topeka & Santa Fe	1	B-B	Sw.	Diesel-Elec.	.....	600	March	.....	G. E.-Amer.-McI. & Sey.
Barber Asphalt Company	1	B	Sw.	Gas-Electric	90,000	230	May	October	West.-Whit.-LeRoi
Belt Ry. Co. of Chicago	1	B-B	Sw.	Diesel-Elec.	203,000	600	April	May	G. E.-Amer.-McI. & Sey.
	1	B-B	Sw.	Diesel-Elec.	199,000	600	April	October	G. E.-Amer.-McI. & Sey.
Bigelow, Sanford Carpet Co.	1	B	Sw.	Gas-Electric	60,000	85	1935	.....	Gen. Elec.-Mack
Celotex Company	1	B	Sw.	Gas-Electric	50,000	165	March	March	West.-Whit.-Climax
Chicago & Illinois Western	1	B-B	Sw.	Diesel-Elec.	200,000	600	May	November	West.-Amer.-McI. & Sey.
DuPont de Nemours, E. I.	1	B	Sw.	Gas-Electric	80,000	250	May	September	West.-Plymouth-LeRoi
East Erie Commercial R. R.	1	B-B	Sw.	Diesel-Elec.	114,000	275	July	November	G. E.-Cooper Bessemer
Ft. Worth & Denver City	1	B-B	Sw.	Diesel-Elec.	200,000	1,000	November	Mar. '36	Gen. Elec.-Cummins
Gair Cartons, Inc.	1	B	Sw.	Gas-Mech.	32,000	130	January	February	Milwaukee-LeRoi
Gulf Refining Co.	1	B-B	Sw.	Gas-Electric	90,000	330	September	November	West.-Porter-Climax
Hawaiian Com. & Sugar	1	B-B	Sw.	Diesel-Elec.	50,000	250	November	Jan. '36	G. E.-Vulcan-Cummins
Hawland & Sons, Inc., Jesse A.	1	B	Sw.	Gas-Mech.	24,000	90	Sept. '34	June	Whitcomb-Waukegon
Hyman-Michaels Co.	1	B	Sw.	Gas-Mech.	40,000	122	March	March	Whitcomb-Waukegon
Lennig & Co., Charles	1	B	Sw.	Gas-Electric	60,000	170	1935	.....	Gen. Elec.-Mack
Mason, Walsh, Atkinson, Kier Co.	10	B	Sw.	Diesel-Elec.	21,000	86	May	Oct.-Dec.	West.-Dav. Bes.-Caterpil.
	4	B	Sw.	Diesel-Elec.	21,000	86	November	Jan. '36	West.-Dav. Bes.-Caterpil.
Midvale Company	1	B	Sw.	Gas-Mech	32,000	122	February	February	Whitcomb-Waukegon
	1	B	Sw.	Diesel-Mech.	60,000	210	June '34	March	Whitcomb-De LaVergne
	1	B	Sw.	Gas-Electric	80,000	200	February	April	G. E.-Whit.-Climax
Norton Co.	1	C	Sw.	Diesel-Elec.	128,000	400	1935	.....	Gen. Elec.-Mack
Peoria & Pekin Union	1	..	Sw.	Diesel-Elec.	.....	600	December	.....	G.E. -Amer.-McI. & Sey.
Phila., Bethlehem & New England	1	B-B	Sw.	Diesel-Elec.	204,000	900	1935	1935	Beth.-Electro-Motive.
Pittsburgh Plate Glass Company	1	C	Sw.	Butane	60,000	200	November	December	Plymouth-LeRoi
Shell Petroleum Company	1	B	...	Gasoline	60,000	185	January	July	Plymouth
Tennessee Valley Authority	2	B	Sw.	Gas-Mech.	20,000	83	October	December	West.-Dav. Bes.-Caterpil.
Texas & New Orleans	1	B	Sw.	Gas.-Mech.	50,000	180	February	March	Plymouth
United States Leather Co.	2	B	Sw.	Gasoline	50,000	165	Sept.-Oct.	.....	Plymouth-LeRoi
U. S. Navy	1	B-B	Sw.	Diesel-Elec.	.....	300	January	.....	G. E.-Amer.-McI. & Sey.
	2	B-B	Sw.	Diesel-Elec.	120,000	300	March	.....	G. E.-Amer.-McI. & Sey.

Export

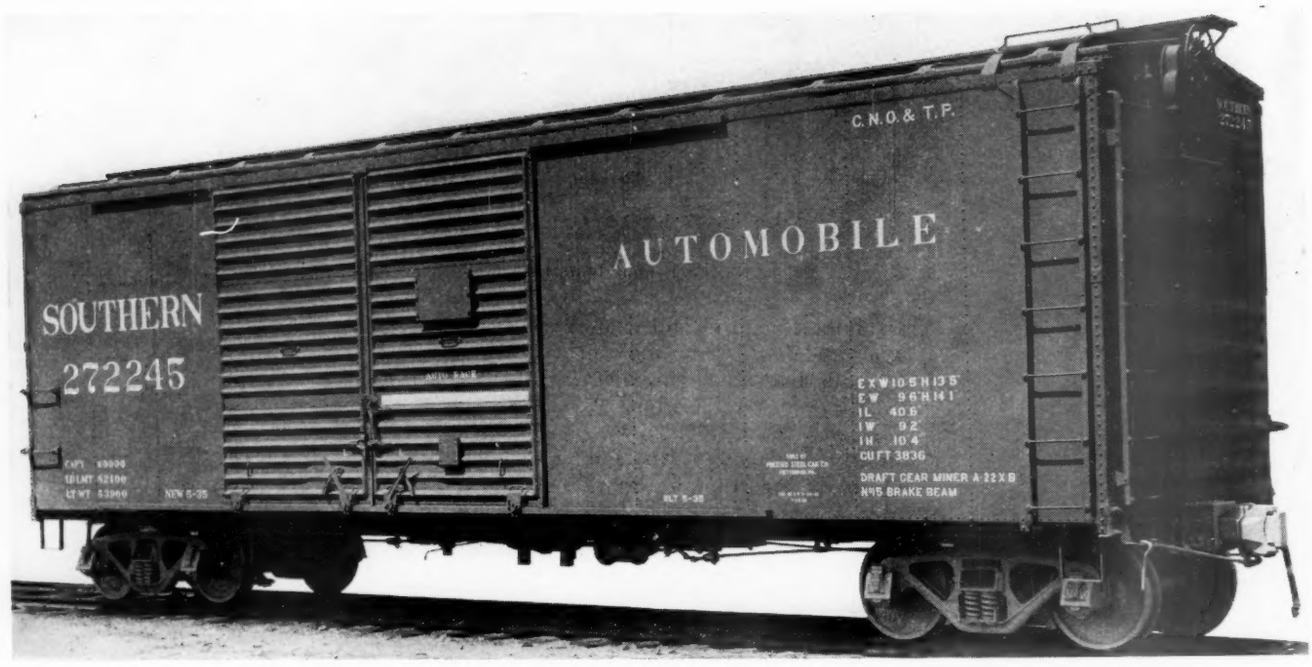
Purchaser	No.	Wheel arrangement	Service	Type	Weight	Horse-power	Date of order	Date of delivery	Builder
Fresnillo Company	1	B	Sw.	Gas-Mech.	60,000	224	Nov. '34	February	Whitcomb-LeRoi
United Fruit Co.	1	C	Sw.	Diesel-Mech.	26,000	90	March	May	Whitcomb-Atlas

Canada

Purchaser	No.	Wheel arrangement	Service	Type	Weight	Horse-power	Date of order	Date of delivery	Builder
Canadian Pacific	1	B-B	Sw.	Diesel-Elec.	240,000	600	November	July, '36	Stone-Frank-Harland Wolff



One of Five Locomotives for the National Railways of Mexico—Built by Baldwin



Steel Automobile Box Car Built for the Southern by the Pressed Steel Car Company

Freight Cars Ordered in 1935

Total of 18,699 compares with 24,611 in 1934—Volume in Canada largest since 1931

By Frank W. Kraeger
Associate Editor

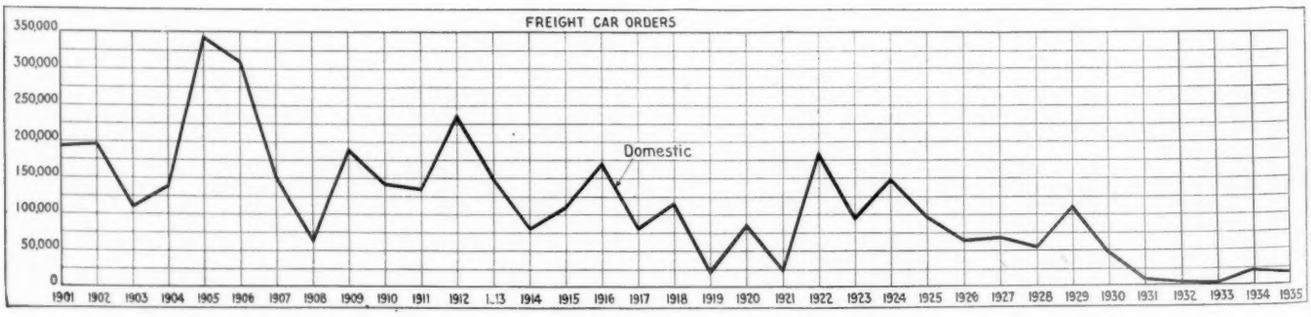
FREIGHT cars ordered last year for domestic service in the United States totaled 18,699, a low volume of business which is equivalent to only 76 per cent of that done in 1934 when 24,611 cars were ordered. Thus 1935 assumes a place in the accompanying Table II as the fourth poorest year on record. In only three other years—1931, 1932 and 1933—since the turn of the century have orders been placed for fewer than 20,000 freight cars for domestic service; in fact in only seven other years have fewer than 50,000 been ordered.

Table I—Freight Car Orders in 1935

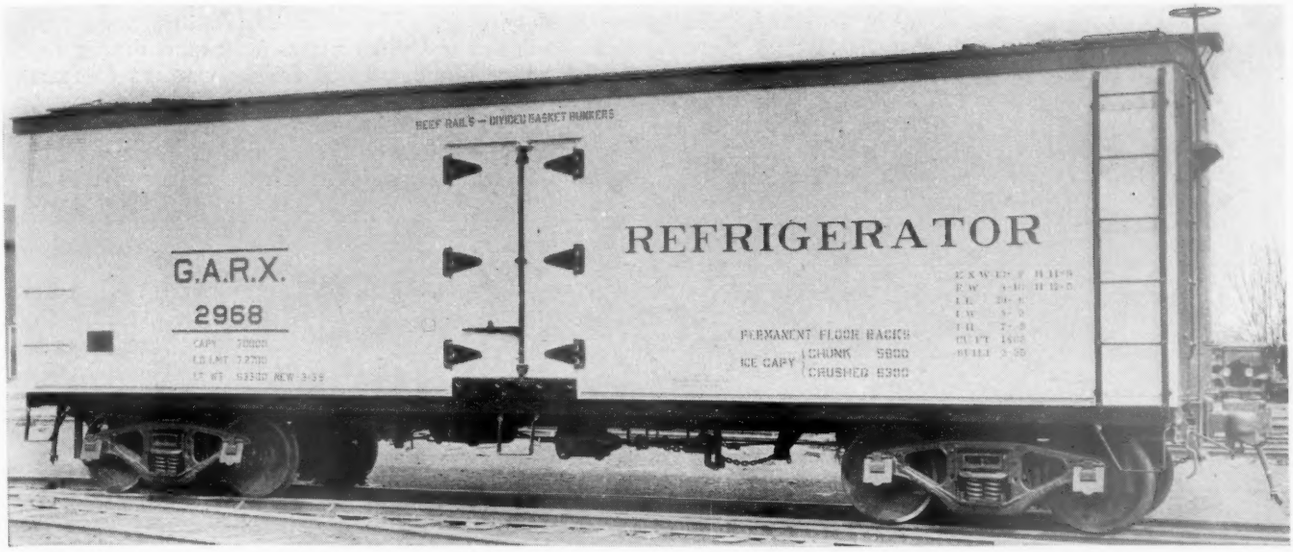
For service in the United States	18,699
For service in Canada	2,421
For export to other countries	110
Grand total	21,230

Equipment markets last year, of course, lacked the stimulus of the large-scale Public Works Administration loans, which was present in 1934. The largest orders of that year, including one for 12,785 cars and another for 7,000, were financed with such loans.

Of the 1935 total 11,138 cars were ordered from outside builders while orders for the remaining 7,561 were placed in railroad shops. In 1934 approximately 7,900 of the 24,611 total were placed in railroad shops. The largest 1935 orders were those of the Pennsylvania for a total of 10,100 cars; of these 6,100 will be constructed

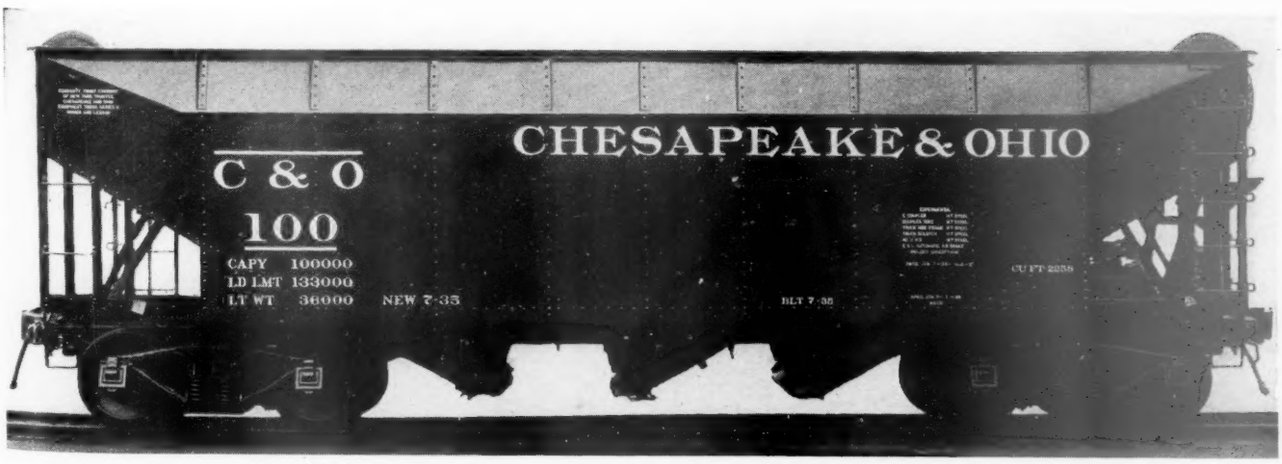


Freight Car Orders From 1901 to 1935



Refrigerator Car Built for General American Refrigerator Service by the General American Car Company—Capacity, 70,000 Lb.; Light Weight, 63,300 Lb.

Hopper Car Having a Capacity of 100,000 Lb. and a Light Weight of 40,100 Lb. Built for the Chesapeake & Ohio by the Pullman-Standard Car Manufacturing Company



Five of These Light-Weight, High-Capacity Hopper Cars with Welded Underframes Were Built for the Chesapeake & Ohio by the Bethlehem Steel Company. Capacity, 2,258 Cu. Ft.; Light Weight, 36,000 Lb.

in that road's own shops and 4,000 by outside builders. The Chesapeake & Ohio made last year's next largest purchase when it ordered a total of 5,230 cars, all from outside builders. Other large 1935 orders were: Chicago, Burlington & Quincy, 505; Cincinnati, New Orleans & Texas Pacific, 500; Norfolk Southern, 500; Northern Refrigerator Line, Inc., 500; Norfolk & Western, 485.

Export business also fell off last year as compared with 1934. Foreign orders for only 110 cars were placed here in 1935. This compares with a 1934 total of 1,323 and with 1933 export orders for 132 cars.

In marked contrast to the recession in the United States was the 1935 business in Canada where government loans provided a stimulus which produced the best volume experienced there since 1931. Thus the 1935 Canadian total of 2,421 compares with the 12 freight cars ordered there in 1934, the 75 in 1933 and the 501 in 1932. In 1931 orders were placed in Canada for 3,807 freight cars.

Freight cars built during 1935 for domestic service in the United States totaled 6,933 or about one-quarter of the production in 1934 when 25,176 cars were built. Production in the United States for export during 1935 involved the building of 888 freight cars, as compared with 151 in both 1934 and 1933, and 82 in 1932.

The foregoing production figures should not be confused with the totals of orders placed. Nor are they comparable with the figures on the number of cars installed as reported in statistics issued by the Association of American Railroads.

The appended tables contain a detailed statement of orders for new freight cars, or those having new bodies, placed during 1935 by railroads and industrial concerns; also those placed in Canada and for export. The list of orders was compiled from information furnished to the

Table II—Orders for Freight Cars Since 1901

Domestic Orders

Year	Freight cars	Year	Freight cars
1901	193,439	1908	62,669
1902	195,248	1909	189,360
1903	108,936	1910	141,024
1904	136,561	1911	133,117
1905	341,315	1912	234,758
1906	310,315	1913	146,732
1907	151,711	1914	80,264

Domestic and Foreign

Year	Domestic	Canadian	Export	Total
1915	109,792	.....	18,222	128,014
1916	170,054	.....	35,314	205,368
1917	79,367	.....	53,191	132,558
1918	114,113	9,657	53,547	177,317
1919	22,062	3,837	3,994	29,893
1920	84,207	12,406	9,056	105,669
1921	23,346	30	4,982	28,358
1922	180,154	746	1,072	181,972
1923	94,471	8,685	396	103,552
1924	143,728	1,867	4,017	149,612
1925	92,816	642	2,138	95,596
1926	67,029	1,495	1,971	70,495
1927	72,006	2,133	646	74,785
1928	51,200	8,901	2,530	62,631
1929	111,218	9,899	3,023	124,140
1930	46,360	1,936	1,200	49,496
1931	10,880	3,807	151	14,838
1932	1,968	501	77	2,546
1933	1,685	75	132	1,892
1934	24,611	12	1,323	25,946
1935	18,699	2,421	110	21,230

Prior to 1918, Canadian orders included in "Domestic."

Table III—Freight Cars Built in 1935

	United States	Canada	Total
Domestic	6,933	801	7,734
Foreign	888	...	888
Total	7,821	801	8,622

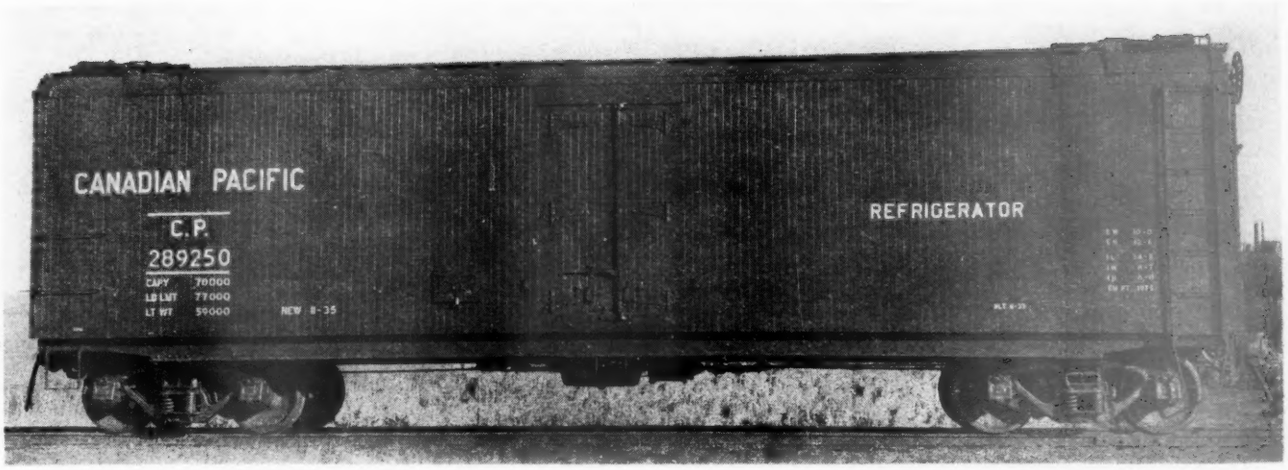
Comparison with Previous Years

Year	Domestic	Foreign	Total	Year	Domestic	Foreign	Total
1899	117,982	1,904	119,886	1906*	236,451	7,219	240,503
1900	113,070	2,561	115,631	1907*	280,216	9,429	284,188
1901	132,591	4,359	136,950	1908*	75,344	1,211	76,555
1902	161,747	2,800	162,599	1909*	91,077	2,493	93,570
1903	153,195	1,613	152,801	1910*	176,374	4,571	180,945
1904	60,955	1,995	60,806	1911*	68,961	3,200	72,161
1905*	162,701	5,305	165,155	1912†	148,357	4,072	152,429

* Includes Canadian output.
† Includes Canadian output and equipment built in company shops.

	United States			Canadian			
Year	Domestic	Foreign	Total	Domestic	Foreign	Total	Grand total
1913	176,049	9,618	185,667	22,017	....	22,017	207,684
1914	97,626	462	98,088	6,453	....	6,453	104,451
1915	58,226	11,916	70,142	1,758	2,212	3,970	74,112
1916	111,516	17,905	129,421	.....	....	5,580	135,001
1917	115,705	23,938	139,643	3,658	8,100	11,758	151,401
1918	67,063	40,981	108,044	14,704	1,960	16,664	124,708
1919	94,981	61,783	156,764	6,391	30	6,421	163,185
1920	60,955	14,480	75,435	.....	....	.....	.....
1921	40,292	6,412	46,704	8,404	745	9,149	55,853
1922	66,289	1,126	67,415	458	100	558	67,973
1923	175,748	2,418	178,166	.....	....	.....	.....
1924	113,761	1,141	114,902	1,721	....	1,721	116,623
1925	105,935	3,010	108,945	.....	....	.....	.....
1926	88,862	2,771	91,633	1,645	....	1,645	93,278
1927	63,390	1,087	64,477	2,851	....	2,851	67,328
1928	46,060	938	46,998	5,158	....	5,158	52,156
1929	82,240	3,168	85,408	8,557	....	8,557	93,965
1930	75,188	1,909	77,097	6,923	....	6,923	84,020
1931	13,205	409	13,614	4,633	....	4,633	18,247
1932	3,254	82	3,336	.....	....	.....	3,336
1933	2,160	151	2,311	550	....	550	2,861
1934	25,176	151	25,327	.....	....	.....	25,327
1935	6,933	888	7,821	801	....	801	8,622

One of an Order of 10 Double-Sheathed Steel Box Cars for Automobile Service Built by the Pullman-Standard Car Manufacturing Company for the Kansas City Southern



Refrigerator Car Built for the Canadian Pacific by the National Steel Car Corporation, Ltd. Light Weight, 50,000 Lb.; Capacity, 70,000 Lb.

Railway Age by the railroads, private car lines, and other purchasers of cars, in response to requests for this information. The data thus furnished were then checked against lists of orders supplied by the car builders, and amplified accordingly, and also against the weekly reports of orders appearing in the Equipment and Supplies column of the *Railway Age*. The production figures were secured in response to requests to the car builders for this information. As in former years the *Railway Age is* especially indebted to the American Railway Car Institute for its assistance in making available reports of the companies affiliated with that organization.

The *Railway Age* is not sufficiently optimistic to believe that the lists can include all the orders placed or that the figures of production are of scientific accuracy. However, it is believed that such omissions as occur will be found to be small and unimportant, and will not vitiate the value of the figures, particularly with respect to comparisons with preceding years, which, after all, is the primary purpose of the compilations.

Freight Car Orders in 1935

For Service in the United States

Purchaser	No.	Class	Capacity	Length, ft.	Length, in.	Construction	Weight	Date of order	Date of delivery	Builder
American Tank Line	1	Tank	80,000	25	1	Steel	48,200	April	May	Amer. Car & Fdy.
	1	Tank	80,000	.....		Steel	40,000	September	December	General American
Baker Castor Oil	1	Tank	.....	.....		.....	.....	May	.....	General American
	3	Tank	.....	.....		.....	.....	November	.....	General American
Bangor & Aroostook	2	Caboose	.....	31	3	St. Underframe	42,200	1935	September	Company Shops
Barrett Company	1	Tank	80,000	.....		Steel	46,500	January	February	Amer. Car & Fdy.
	1	Tank	80,000	.....		Steel	49,800	January	March	Amer. Car & Fdy.
	1	Tank	80,000	.....		Steel	53,400	January	March	Amer. Car & Fdy.
	1	Tank	80,000	.....		Steel	39,700	January	February	Amer. Car & Fdy.
	1	Tank	80,000	.....		Steel	39,700	January	February	Amer. Car & Fdy.
	1	Tank	80,000	.....		Steel	45,800	January	March	Amer. Car & Fdy.
Bartex Pipe Line Co	20	Tank	100,000	.....		Steel	74,500	October	.....	General American
Belle Alkali Co	1	Tank	.....	.....		.....	.....	January	.....	General American
Brown Company	2	Tank	100,000	.....		.....	.....	February	April	General American
California Dispatch Line	2	Tank	6,000g	39	1½	Steel	58,650	August	October	Amer. Car & Fdy.
	2	Tank	.....	.....		.....	.....	August	.....	General American
Canfield Tank Line Co	3	Tank	80,000	.....		.....	42,900	June	July	General American
Central Chemical Co	1	Tank	.....	.....		.....	.....	June	.....	General American
Chesapeake & Ohio	2,000	Hopper	100,000	33	0	Steel	40,500	June	Feb., '36	Amer. Car & Fdy.
	1,500	Hopper	100,000	33	0	Steel	40,500	June	Jan., '36	Pullman-Standard
	1,500	Hopper	100,000	33	0	Steel	40,500	June	Jan., '36	General American
	5	Hopper	100,000	33	6	Steel	36,220	January	August	Bethlehem
	100	S. S. Auto	100,000	40	6	Steel Frame	54,800	August	Jan., '36	Pullman-Standard
	75	Flat	100,000	50	0	St. Underframe	46,400	June	December	Bethlehem
	50	Stock	80,000	40	6	Steel Frame	42,000	June	December	General American
Chicago, Burlington & Quincy	500	Gondola	100,000	40	5	Steel Frame	42,900	April	July-Dec.	Company Shops
	5	Hopper	139,000	34	10	Steel Cor-Ten	30,000	January	April	Pressed Steel
Cinn., New Orleans & Tex. Pacific	300	D. S. Auto	80,000	40	6	Steel	54,000	February	May	Pressed Steel
	200	D. S. Auto	80,000	40	6	Steel	54,000	September	December	Pressed Steel
Delaware & Hudson	50	Hopper	110,000	34	0	Steel Frame	42,800	March	October	Company Shops
Detroit Chemical Works	1	Tank	10,000g	37	7	Steel	53,542	November	December	Amer. Car & Fdy.
	1	Tank	8,000g	36	3¾	Steel	44,917	November	December	Amer. Car & Fdy.
Diamond Alkali	8	Tank	.....	.....		.....	.....	January	.....	General American
duPont de Nemours & Co., E. I.	1	Tank	8,000g	36	9½	Steel	51,500	March	May	Amer. Car & Fdy.
	1	Tank	4,170g	28	11	Steel	42,300	March	May	Amer. Car & Fdy.
	2	Tank	11,200g	42	7½	Steel	92,000	June	August	Amer. Car & Fdy.
	3	Tank	8,000g	36	3¾	Steel	42,000	October	November	Amer. Car & Fdy.
	1	Tank	6,000g	31	10¾	Steel	38,298	October	November	Amer. Car & Fdy.
	3	Tank	8,000g	36	3¾	Steel	50,150	November	December	Amer. Car & Fdy.
Electro Bleaching Gas Co	8	Tank	80,000	33	0	Steel	50,000	March	May	Amer. Car & Fdy.
Elgin, Joliet & Eastern	150	Gondola	140,000	48	6	Steel	56,500	April	July-Aug.	Company Shops
Empire Oil & Refining	3	Tank	.....	.....		.....	.....	January	.....	General American
Ethyl Gasoline Corp	3	Tank	3,000g	36	3	Steel	45,100	April	June	Amer. Car & Fdy.
	3	Tank	6,000g	33	7	Steel	51,500	April	June	Amer. Car & Fdy.
	12	Tank	3,000g	30	3	Steel	45,100	June	July	Amer. Car & Fdy.
	6	Tank	6,000g	33	7	Steel	51,500	June	July	Amer. Car & Fdy.
General Chemical Co	1	Tank	80,000	36	6¼	Steel	46,100	November	December	Amer. Car & Fdy.
Grand Trunk Western	100	Gondola	140,000	50	6	Steel	52,681	August	Dec.-Jan., '36	Magor
Hercules Powder Co	5	Tank	.....	.....		.....	.....	January	.....	General American
	6	Tank	.....	.....		.....	.....	February	.....	General American
	2	Tank	.....	.....		.....	.....	May	.....	General American
	4	Tank	.....	.....		.....	.....	June	.....	General American

Purchaser	No.	Class	Capacity	Length, ft.	in.	Construction	Weight	Date of order	Date of delivery	Builder
Hooker Electrochemical Co.	4	Tank	80,000	30	6	.....	68,000	May	May	General American
Huber Corp., J. M.	3	Hopper	80,000	45	10½	Steel	49,800	November	December	Amer. Car & Fdy.
Kansas, Oklahoma & Gulf	5	D. S. Box	100,000	40	6	Steel Frame	53,800	October	Nov.-Dec.	Mount Vernon
Kansas City Southern	10	D. S. Box	100,000	50	6	Steel	59,700	July	November	Pullman-Standard
Kimberly-Clark Co.	1	Tank	.....	.....		.....	.....	June	.....	General American
Liquid Carbonic Corp.	5	Refrigerator	80,000	44	6⅜	Steel	42,000	March	May	Amer. Car & Fdy.
Merchants Despatch, Inc.	100	Refrigerator	70,000	33	2	Steel Frame	61,900	February	April	Company Shops
Merrimac Chemical Co.	1	Tank	60,000	33	7	Steel	55,000	February	March	Amer. Car & Fdy.
	1	Tank	9,800g	36	11¼	Steel	54,900	February	March	Amer. Car & Fdy.
	1	Tank	9,800g	36	11¼	Steel	54,900	May	June	Amer. Car & Fdy.
	1	Tank	7,000g	31	10¾	Steel	41,887	November	December	Amer. Car & Fdy.
	1	Tank	.....	.....		.....	.....	November	.....	General American
Mobile & Ohio	5	S. S. Box	80,000	40	6	Steel	49,000	October	December	Pressed Steel
Monsanto Chemical Co.	1	Tank	8,000g	36	3¾	Steel	44,500	February	March	Amer. Car & Fdy.
	4	Tank	30,000	42	4⅛	Steel	52,900	May	August	Amer. Car & Fdy.
	4	Tank	30,000	32	7	Steel	48,500	May	August	Amer. Car & Fdy.
	2	Tank	5,000g	32	7	Steel	38,400	August	September	Amer. Car & Fdy.
	3	Tank	7,000g	31	10¾	Steel	43,600	August	September	Amer. Car & Fdy.
	3	Tank	30,000	32	7	Steel	49,650	November	December	Amer. Car & Fdy.
	1	Tank	4,000g	29	8½	Steel	45,350	November	December	Amer. Car & Fdy.
	3	Tank	.....	.....		.....	.....	January	.....	General American
	1	Tank	.....	.....		.....	.....	May	.....	General American
	3	Tank	.....	.....		.....	.....	August	.....	General American
	4	Tank	.....	.....		.....	.....	November	.....	General American
Niacet Chemicals Corp.	3	Alum. Tank	80,000	37	3¾	St. Underframe	36,000	February	Mar.-Apr.	Amer. Car & Fdy.
Norfolk & Western	10	Cement	100,000	26	10¾	Steel	45,000	July	Dec., '36	Company Shops
	475	Hopper	115,000	30	3	Steel	41,500	September	1936	Company Shops
Norfolk Southern	500	Box	80,000	40	6	Steel	43,700	July	December	Pullman-Standard
Northern Refrigerator Line, Inc.	500	Refrigerator	80,000	41	11⅝	Steel Frame	59,500	March	July	Merchants Desp.
Oldbury Electrochemical Co.	1	Tank	.....	.....		.....	.....	April	.....	General American
Pennsylvania	100	Hopper	140,000	31	0	Steel	50,600	March	July	Company Shops
	700	S. S. Box	100,000	50	6	Steel	58,300	December	1936	Company Shops
	300	S. S. Box	100,000	50	6	Steel	59,000	December	1936	Company Shops
	2,000	S. S. Box	100,000	40	6	Steel	51,800	December	1936	Company Shops
	300	Hopper	140,000	31	0	Steel	50,000	December	1936	Company Shops
	2,000	Gondola	140,000	52	6	Steel	55,600	December	1936	Company Shops
	700	S. S. Box	100,000	40	6	Steel	49,500	December	1936	Company Shops
	1,000	S. S. Box	100,000	40	6	Steel	49,500	December	1936	Pressed Steel
	800	S. S. Box	100,000	40	6	Steel	49,500	December	1936	Amer. Car & Fdy.
	700	S. S. Box	100,000	40	6	Steel	49,500	December	1936	Pullman-Standard
	600	S. S. Box	100,000	40	6	Steel	49,500	December	1936	Bethlehem
	400	S. S. Box	100,000	40	6	Steel	49,500	December	1936	General American
	250	S. S. Box	100,000	40	6	Steel	49,500	December	1936	Greenville
	250	S. S. Box	100,000	40	6	Steel	49,500	December	1936	Ralston
Pennsylvania Salt Mfg. Co.	4	Tank	60,000	33	7	Steel	63,900	January	April	Amer. Car & Fdy.
	1	Tank	60,000	33	10	Steel	64,160	August	September	Amer. Car & Fdy.
	5	Tank	4,000g	28	7¾	Steel	35,600	September	October	Amer. Car & Fdy.
	3	Tank	60,000	33	10	Steel	64,160	November	Jan., '36	Amer. Car & Fdy.
	12	Tank	7,000g	31	10¾	Steel	42,800	December	Jan., '36	Amer. Car & Fdy.
	4	Tank	.....	.....		.....	.....	January	.....	General American
Pittsburgh & Lake Erie	5	Hopper	139,000	34	10	Steel Cor-Ten	30,000	May	.....	Pressed Steel
Reading	100	D.S.Auto Box	100,000	40	6	Steel	56,500	June	November	Company Shops
	25	Caboose	.....	24	4⅜	Steel	42,400	September	Feb., '36	Company Shops
Republic Steel Corp.	5	Gondola	125,000	26	6	Steel	81,400	June	August	Pullman-Standard
Rustless Iron Corp. of America	1	Hopper	134,100	35	0	St. Underframe	33,100	April	June	Ralston
St. Louis-San Francico	2	.....	.....	.....		.....	.....	1935	1935	Company Shops
Shawinigan Products Corp.	8	Tank	.....	.....		.....	.....	January	.....	General American
Shell Oil Company	15	Tank	8,000g	.....		Steel	43,250	April	April	General American
	8	Tank	8,000g	.....		Steel	43,250	August	September	General American
	2	Tank	6,000g	.....		Steel	38,800	August	September	General American
Shippers' Car Line	1	Tank	4,500g	32	7	Steel	41,500	October	December	Amer. Car & Fdy.
Sinclair Refining Co.	7	Tank	5,000g	32	4	Steel	38,000	September	October	Amer. Car & Fdy.
Stauffer Chemical Co.	1	Tank	.....	.....		.....	.....	June	.....	General American
	1	Tank	.....	.....		.....	.....	August	.....	General American
Union Carbide Co.	2	Cov. Hopper	100,000	22	8⅜	Steel	42,400	June	September	Greenville
Union Tank Car Co.	13	Tank	80,000	36	1	.....	46,700	May	August	Company Shops
	3	Tank	80,000	36	1	.....	46,700	November	.....	Company Shops
	1	Tank	80,000	32	2	.....	45,000	November	.....	Company Shops
	20	Tank	100,000	40	5	.....	70,100	September	.....	Company Shops
United Carbon Co.	6	Hopper	80,000	45	10½	Steel	49,800	May	August	Amer. Car & Fdy.
	10	Hopper	80,000	45	10½	Steel	49,800	October	December	Amer. Car & Fdy.
	4	Hopper	80,000	45	10½	Steel	49,800	November	December	Amer. Car & Fdy.
United States Sugar Corporation	10	Cane	60,000	.....		.....	.....	December	.....	Magor
Western Maryland	10	Cement	.....	.....		.....	.....	1935	1935	Company Shops

Export

Purchaser	No.	Class	Capacity	Length, ft.	in.	Construction	Weight	Date of order	Date of delivery	Builder
Cerro de Pasco Copper Co.	15	Hopper	80,000	.....		.....	.....	December	.....	Bethlehem
	15	Hopper	80,000	.....		.....	.....	December	.....	Magor
International Petroleum Co., Ltd.	2	Tank	80,000	.....		.....	.....	August	.....	Amer. Car & Fdy.
Interoceanic Ry. of Mexico, Ltd.	* 2	.....	.....	.....		.....	.....	1935	1935	Company Shops
Mexican Ry. Co., Ltd.	50	S. S. Box	80,000	36	0	Steel	41,000	May	October	Koppel
National Railways of Mexico	*10	.....	.....	.....		.....	.....	1935	1935	Company Shops
	* 5	.....	.....	.....		.....	.....	1935	1935	Company Shops
Newfoundland Railway	25	S. S. Box	60,000	35	10	Steel Frame	32,500	July	October	Koppel
Tata Iron & Steel Co.	3	Ore	100,000	.....		.....	.....	December	.....	Magor

Canada

Purchaser	No.	Class	Capacity	Length, ft.	in.	Construction	Weight	Date of order	Date of delivery	Builder
Canadian National	250	Gondola	150,000	48	6¼	Steel	53,200	August	Jan., '36	Eastern Car
	200	Refrigerator	80,000	40	7¾	St. Underframe	56,500	August	Feb., '36	Eastern Car
	150	D. S. Auto	80,000	40	6	Steel	.....	August	Feb., '36	National Steel
	125	Refrigerator	80,000	35	2¼	St. Underframe	.....	August	.....	Company Shops
	125	Refrigerator	80,000	35	2¼	St. Underframe	.....	August	.....	Company Shops
	250	Auto	80,000	40	6	Steel	.....	August	.....	Can. Car & Fdy.
	80	Sand	140,000	31	2½	Steel	.....	August	.....	Can. Car & Fdy.
Canadian Pacific	700	D. S. Box	80,000	40	6	Steel	44,000	August	Jan., '36	Can. Car & Fdy.
	150	Refrigerator	80,000	34	4¾	St. Underframe	58,000	August	November	National Steel
	100	Hopper	100,000	33	0	Steel	43,000	August	December	National Steel
	170	Gondola	140,000	37	6	Steel Frame	55,000	August	Feb. '36	National Steel
Dominion Coal Co. (S. & L. Ry.)	100	Hopper	100,000	30	¼	Steel	41,600	Dec., '34-Jan.	February	Eastern Car
Dominion Coal Co	20	Air Dump	30 yd.	34	0	Steel	72,500	Dec., '34-Jan.	March	Eastern Car
Thurso & Nation Valley	1	.....	.....	.....		.....	.....	1935	1935	Company Shops

* Not included in totals.

Passenger-Train Car Orders in 1935

Total of only 63 makes last year one of poorest on record—16 ordered in Canada

By Frank W. Kraeger
Associate Editor

ONLY 63 passenger-train cars were ordered during 1935 for domestic service in the United States. This is not the lowest total on record—the volume having been smaller in four other years since 1901—but it is nevertheless a marked downturn as compared with 1934 when orders for 388 passenger-train cars were reported. In the six-year period from 1930 to 1935 only 1,174 passenger train cars have been ordered, or slightly more than half the 2,303 ordered in the single year, 1929.

Table I—Passenger-Train Car Orders of 1935

For service in the United States	63
For service in Canada	16
For export to other countries	..
Grand total	79

Table II—Orders for Passenger-Train Cars Since 1901

Year	Domestic Orders Only: Passenger cars	Year	Passenger cars
1901	2,879	1909	4.514
1902	3,459	1910	3,881
1903	2,310	1911	2,623
1904	2,213	1912	3,642
1905	3,289	1913	3,124
1906	3,402	1914	1,674
1907	1,791	1915	1,978
1908	1,319		

Year	Domestic and Foreign Domestic	Canadian	Export	Total
1916	2,302	...	109	2,411
1917	1,124	...	43	1,167
1918	9	22	26	57
1919	292	347	143	782
1920	1,781	275	38	2,094
1921	246	91	155	492
1922	2,382	87	19	2,488
1923	2,214	263	6	2,483
1924	2,554	100	25	2,679
1925	2,191	50	76	2,317
1926	1,868	236	58	2,162
1927	1,612	143	48	1,803
1928	1,930	334	29	2,293
1929	2,303	122	33	2,458
1930	667	203	15	885
1931	11	11	21	43
1932	39	...	...	39
1933	6	...	...	6
1934	388	...	15	403
1935	63	16	...	79

Meanwhile, however, air-conditioning work has proceeded apace until, as was pointed out in the *Railway Age* Passenger Traffic Issue of November 30, it is estimated that by the close of 1935 a total of about 5,800 cars had been so equipped. Of these approximately 43 per cent are owned by railroads and the remainder by the Pullman Company.

The Erie's order for 55 milk cars accounted for the great bulk of the 1935 business in the passenger-train car field. This road was also 1934's largest purchaser, ordering in that year 125 coaches and eight combination passenger, baggage and mail cars—a total of 133.

No passenger-train cars were ordered in the United States last year for export. In only two other years—1932 and 1933—since 1916, when these figures were first

Table III—Passenger-Train Cars Built in 1935

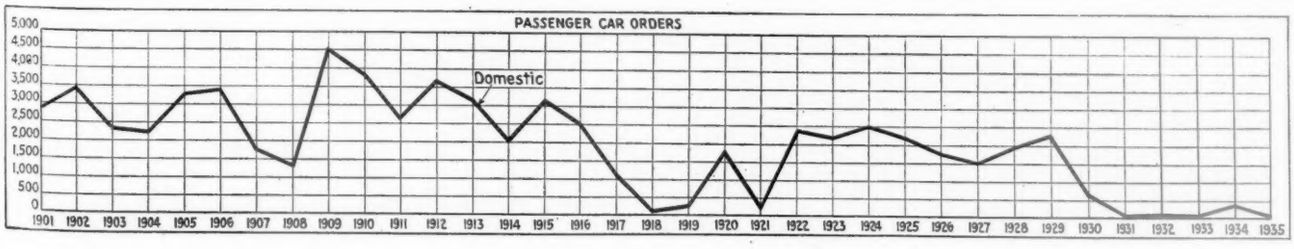
	United States	Canada	Total
Domestic	197	...	197
Foreign	...	...	...
	197	...	197

Comparison with Previous Years

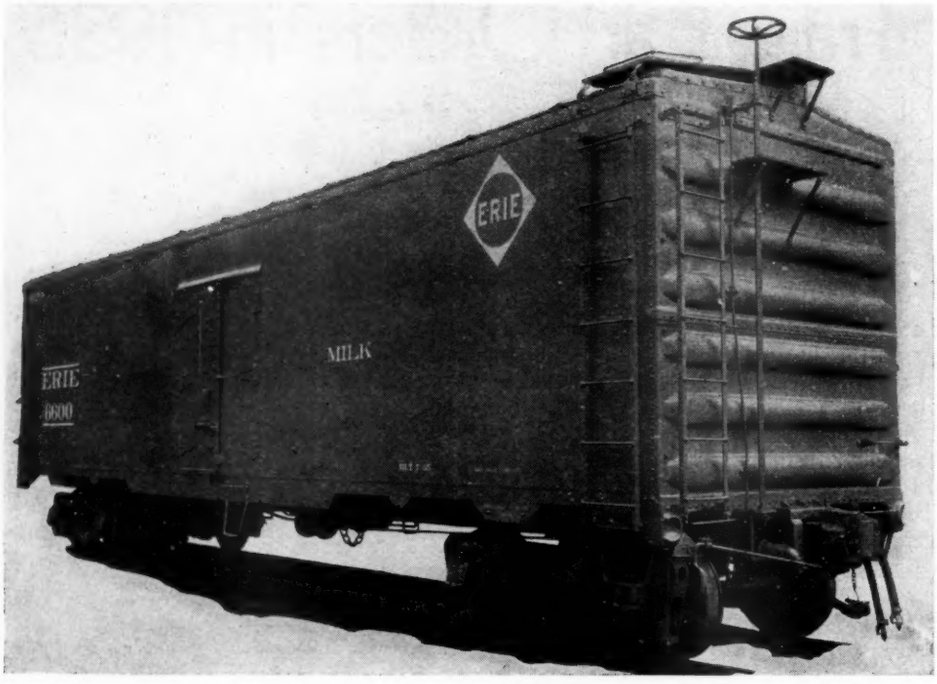
Year	Domestic	Foreign	Total
1899	1,201	104	1,305
1900	1,515	121	1,636
1901	1,949	106	2,055
1902	From 1902 to 1907		1,948
1903	passenger car figures		2,007
1904	in these two columns		2,144
1905*	included in corre-		2,551
1906*	sponding freight car		3,167
1907*	columns.		5,457
1908*	1,645	71	1,716
1909*	2,698	151	2,849
1910*	4,136	276	4,412
1911*	3,938	308	4,246
1912†	2,822	238	3,060

* Includes Canadian output.
† Includes Canadian output and equipment built in company shops.

Year	United States: Domestic	Foreign	Total	Canadian: Domestic	Foreign	Total	Grand total
1913	2,559	220	2,779	517	...	517	3,296
1914	3,310	56	3,366	325	...	325	3,691
1915	1,852	14	1,866	83	...	83	1,949
1916	1,732	70	1,802	37	...	37	1,839
1917	1,924	31	1,955	45	...	45	2,000
1918	1,480	92	1,572	1	...	1	1,573
1919	306	85	391	160	...	160	551
1920	1,272	168	1,440	...	...	...	1,440
1921	1,275	39	1,314	361	...	361	1,675
1922	676	144	820	71	...	71	891
1923	1,507	29	1,536	...	...	...	1,536
1924	2,150	63	2,213	167	...	167	2,380
1925	2,363	50	2,413	...	...	...	2,411
1926	2,184	102	2,286	285	...	285	2,571
1927	1,785	50	1,835	126	...	126	1,963
1928	1,356	15	1,371	237	...	237	1,608
1929	1,254	20	1,274	162	...	162	1,436
1930	1,264	40	1,304	210	...	210	1,514
1931	198	21	219	66	...	66	285
1932	39	...	39	...	...	...	39
1933	6	...	6	...	...	...	6
1934	268	15	283	...	...	...	283
1935	197	...	197	...	...	...	197



Passenger Car Orders From 1901 to 1935



Steel Milk Car for the Erie, Built by Greenville Steel Car Co.

segregated in the accompanying Table II, has foreign business been thus at a standstill. Export orders were placed here in 1934 for 15 cars.

Canadian passenger-train car markets, following the same 1935 trend as locomotive and freight car markets there, showed some activity for the first time since 1931. The Canadian Pacific in 1935 ordered 16 passenger-train cars. This 16 constitutes the Canadian total and comparés with the absence of orders in 1934, 1933 and 1932 and the 11 ordered in 1931. In 1930 orders of 203 passenger-train cars were placed in Canada.

Passenger-train cars built during 1935 for domestic service in the United States totaled 197 as compared with 268 in 1934 and six in 1933. Like export orders, production here for export last year was at a standstill. Neither were any passenger-train cars built in Canada during 1935—the fourth successive year of such stagnation there.

The accompanying list of orders, amplifying the summary tables also published herewith, has been compiled in the usual way. Returns from railroads were checked against lists of orders supplied by the car builders, largely through the courtesy of the American Railway Car Institute.

†Passenger-Train Car Orders in 1935

For Service in the United States

Purchaser	No.	Class	Length Ft.	Length In.	Principal Material of Construction	Seating Capacity	Weight	Date of Order	Date of Delivery	Builder
Atchison, Topeka & Santa Fe	1	Coach	79	8	Steel Frame	63	100,000	July	December	Budd
	1	Coach	79	2	Steel Frame	63	100,000	September	Mar. '36	St. Louis Car
Denver & Rio Grande Western	4 AC	Diner-Obs.	79	5¼	Steel	38	166,700	January	June	Company Shops
Erie	55	Milk	40	8¼	Steel	..	60,000	April	July	Greenville
St. Louis-San Francisco	2	.....	..	..	.....	..	.....	1935	1935	Company Shops

† AC Indicates cars are air conditioned.

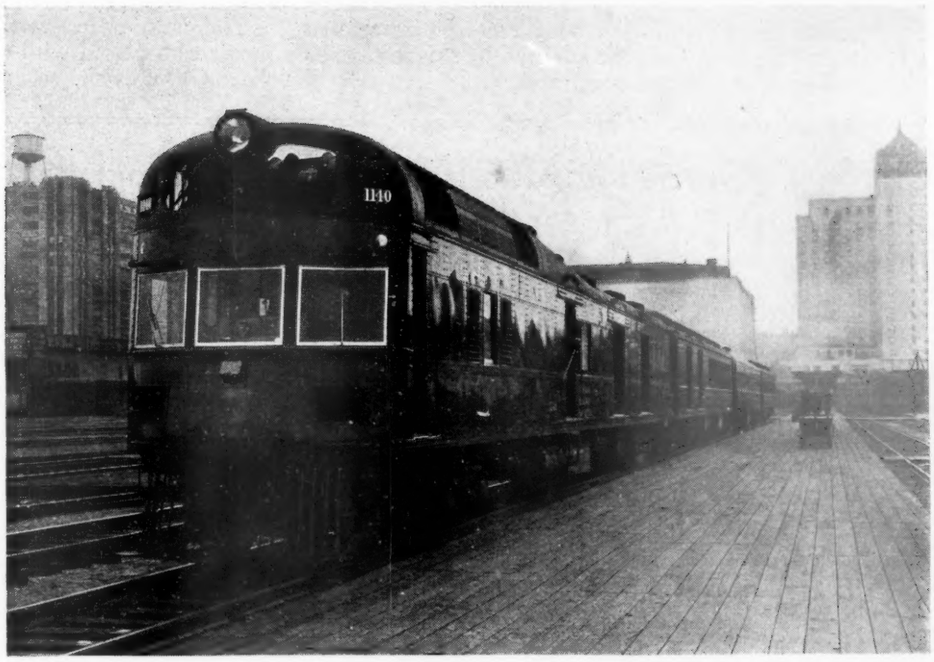
Canada

Purchaser	No.	Class	Length Ft.	Length In.	Principal Material of Construction	Seating Capacity	Weight	Date of Order	Date of Delivery	Builder
Canadian Pacific	8	Coach	65	0	Steel	51	106,000	October	.....	Natl. St.-Co. Shops
	4	Bag. & Buffet	67	9½	Steel	28	107,000	October	.....	Natl. St.-Co. Shops
	4	Mail & Exp.	70	7	Steel	..	106,500	October	.....	National Steel

Mexico

Purchaser	No.	Class	Length Ft.	Length In.	Principal Material of Construction	Seating Capacity	Weight	Date of Order	Date of Delivery	Builder
National Railways of Mexico	*3	.....	..	..	.....	..	.....	1935	1935	Company Shops
	*18	.....	..	..	.....	..	.....	1935	1935	Company Shops

* Not included in totals.



Diesel-Electric Rail Car Built in 1935 for the Boston & Maine by the St. Louis Car Company —Equipped with Ingersoll-Rand Engines and G. E. Electrical Equipment

Three Motor Trains Ordered in 1935

Majority of orders for single-unit cars characterized by light weight and power limited to self-propulsion

By C. B. Peck,
Mechanical Department Editor

ORDERS for three motor trains—one completely articulated and two partially articulated—for nine single-unit rail-motor cars, and for six additional cars—one of two articulated body units and the others single units for inclusion in existing motor trains—were placed by the steam railways of the United States during 1935. No orders were placed in Canada for equipment of this type during the year. One order of four rail-motor cars was placed in the United States for export.

Power-Plant Capacity of Articulated Motor Trains and Rail-Motor Cars, U. S. and Canada

Horsepower Over	To and incl.	1925	'26	'27	'28	'29	'30	'31	'32	'33	'34	'35
...	100...	13	14	2	5	6	2	..	5*	7	..	1
100	125...	5	7	..	1	3	..	..	3	1	..	1
125	150...	9	..	..	4	1	..	..	..	..	..	..
150	175...	20	1	..	1	..	..	..	..	..	2	3
175	200...	49	3	3	1	..	..	..	..	1	..	2
200	250...	36	65	43	13	2	..	..	..	..	..	..
250	300...	2	26	76	64	15	7	1	..	..	..	..
300	350...	2	..	..	30	2	2	..	..	..	..	..
350	400...	..	..	..	18	64	25	22	6	1	..	..
400	450...	..	8	7	6	2	..	1	..	..	..	..
450	500...	..	11	1	4	5	..	..	..	..	..	..
500	600...	..	..	8	12	21	17	5	4	2	3	..
600	700...	..	..	..	..	..	..	..	..	..	2	3
700	800...	..	..	..	3	9	..	..	..	..	3	..
800	900...	..	..	..	..	..	..	1	..	1	..	1
Over	1,000...	..	..	..	..	..	..	..	..	..	3	3
Unclassified		..	..	24	1	2	..	..	..	..	..	..

* Four are small cars for a 3-ft. gage line.

Although the number of separate equipment units ordered during 1935 considerably exceeds the number ordered during 1934—the latter included seven articulated trains, each containing from three to ten body units—when compared on the basis of the passenger transportation provided, they represent somewhat less than the equipment ordered in 1934.

Orders for Articulated Motor Trains, Rail-Motor Cars and Trailers

	1923	'24	'25	'26	'27	'28	'29	'30	'31	'32	'33	'34	'35
For service in U.S.	77	120	149	142	180	175	132	54	26	15	18*	14§	18‡
Canada	3	12	7	4	9	10	10	8	4	4	..	..	..
For export	22	...	34	32	12	9	28	3	10	2	3	..	4
Total	102	132	190	178	201	194	169	65	40	21	21*	14§	22‡
Motor trains and cars	93	112	171	161	176	172	159	56	40	20	17*	13§	18
Trailers	9	20	19	17	25	22	11	9	..	1	4	1†	4

* Includes three articulated trains.
§ Includes seven articulated trains.
† This is a body unit for addition to an articulated train.
‡ Includes one articulated and two partially articulated trains.

It will be noted that included in the orders for 1935 are examples of the entire range of rail-motor car equipment, starting with the light-weight, single-unit cars designed for operation without trailers and ranging through the heavier and more powerful cars of conventional body construction designed to serve as substitutes for steam locomotives in passenger-train service, to the light-weight, streamline motor trains not interchangeable with standard railway equipment. Included in the latter

classification are a number of body units or articulated cars which have been built for addition to existing trains of light-weight, articulated construction.

The list of orders for articulated motor trains and rail-motor cars placed with the builders in the United States during 1935 is shown in one of the accompanying tables.

Orders for Articulated Motor Trains and Rail-Motor Cars

For Service in the United States

Road	No.	No. Car Units Each	Type of Power Plant	Horse-power	Seating Capac.	Length of Bagg. Compt. Ft.	Length of Bagg. Compt. In.	Weight	Builder
Alaska Railroad	1	1	Gasoline	62	9	4	4	6,900	Kalamazoo-Dodge
Chicago, Burlington & Quincy	1	4*	Diesel-Elec.	660	92	77	2	289,961	Electro-Motive-G.E.-Budd
Norfolk Southern	2	1	Gasoline	180	53	13	0	42,000	Hall Scott-Amer. Car & F.
Panama	1	1	Gasoline	120	46	8	0	25,000	Buda-Edwards
Pullman Company	1	2	.....	....	..	..	..	.....	Pullman-Standard
Seaboard Air Line	3AC	1	Gasoline	168	57	18	0	52,000	Hall Scott-Amer. Car & F.
	2	1	Diesel-Elec.	600	..	33	0	156,126	Electro-Motive-G.E.-St. L. Car
Union Pacific	2	10†	Diesel-Elec.	2400	182	..	..	1,200,000	Electro-Motive-G.E.-Pullman-Std.
	1	1‡	Diesel-Elec.	900	..	..	..	137,600	Electro-Motive-G.E.-Pullman-Std.
	1	1‡	Diesel-Elec.	1200	..	..	..	174,500	Electro-Motive-G.E.-Pullman-Std.
	2	1‡AC	Diner-Lounge	....	56	..	..	62,300	Pullman-Standard
	1	1‡AC	Kit.-Din.-L'ng.	....	35	..	..	58,200	Pullman-Standard

Export

National Rys. of Colombia	4	1	Gasoline	260	30	12	0	32,000	Buda-Edwards

* Two body sections air-conditioned.
† Not including the locomotive which occupies two additional vehicles.
‡ Body sections built for addition to existing motor trains.

Mexican Railways Show Continued Improvement

(*Continued from page 40*)

10 classifications of traffic showed decreases, 18 produced increases. As a rule the decreases were moderate in extent whereas the increases, particularly those pertaining to coal, fruits, petroleum and miscellaneous traffic, were larger, with the result that a net increase of 716,070 tons was recorded in freight handled.

The number of loaded cars interchanged between the National Railways of Mexico and American roads at the border as well as those received and forwarded at water ports, is given in Table II. It will be noted from this tabulation that, while imports by rail increased by 474 cars, or 7.65 per cent, the exports increased 5,102 cars, or 91.85 per cent. The principal reason for this situation lies with the fact that the low rate of exchange prevailing (3.60 pesos per American dollar) places Mexican business interests on a more favorable competitive basis. In contrast, however, is the fact that water port imports increased 2,523 cars, or 22.95 per cent, while the exports rose only 37 cars, or 1.19 per cent.

Expenditures for additions and betterments totaled $5,550,173 for the first nine months, including $2,518,809 for road construction, $2,165,738 for changing out rail, $764,555 for the modification and purchase of locomotives, $68,277 for the modification and renewal of bridges and $32,794 for the installation of steel lining in wooden box cars. These expenditures compare with a total outlay for additions and betterments in the first 10 months of 1934 of $3,145,386. The rail-replacement program was carried out largely on the Guadalajara and Torreon divisions, while the largest expenditures for road construction were made on the Santa Catarina and Suchil branches. The item of $764,555 includes funds expended in part payment for three locomotives recently acquired from the Baldwin Locomotive Works. In addition to these expenditures 1,990 cars were purchased in the United States during the year, the cost of which is being charged to operating expenses pending full payment of the amount on a per diem basis after which it will be transferred to the proper additions and betterments accounts. Another project carried out during the year was the installation of centralized traffic control between Mexico, D. F., and Lecheria, Mex., 22 kilometers.

Locomotives Ordered

(*Continued from page 72*)

19 built here for export during 1934 and six in 1933. In Canada four locomotives—all steam—were built last year; none was built there in either 1934 or 1933, while in 1932 there were three.

The distinction between locomotives ordered and the number built should be emphasized. A locomotive is under construction for several months and thus locomotive production figures for any year naturally include some units which were ordered during the closing months of the year previous to that under review. It is this overlap from year to year that results in a total production figure different from the total ordered. Also, while the factor has been unimportant in the depression years, it should nevertheless again be pointed out, to those comparing the more recent with the more remote years listed in the accompanying tabulation, that modern locomotives are far more powerful and far more costly than those of the days when yearly orders totaled thousands.

The Car Service Division of the Association of American Railroads reports monthly totals of locomotive installations and retirements. These figures will not agree with the *Railway Age* totals of locomotives ordered or built, because the Car Service Division total covers only Class I carriers, whereas the *Railway Age* figures cover all carriers, and also industrial users.

The details in the appended list of locomotive orders were supplied by railways and other purchasers in response to inquiries from the *Railway Age*. They were checked against similar lists furnished through the cooperation of the builders, and amplified by reference to the weekly reports in the Equipment and Supplies column of the *Railway Age*. The *Railway Age* does not, however, desire to make any claims as to the scientifically statistical accuracy of the tables.

Crossing Protection Installations Increased During 1935

Federal and state governments shared expense with railroads in large program involving 628 crossings

By John H. Dunn
Signaling Editor

THE year 1935 saw a marked increase in the number of installations of automatic protection at highway-railroad grade crossings, a total of 628 projects being completed in the United States and Canada, as compared with 392 during the previous year. In fact the expenditure for crossing protection equalled or exceeded that for automatic block signaling.

This increase in the installation of automatic crossing protection was due primarily to the fact that the regular programs of installations made by the railroads at their own expense were augmented by installations financed by federal, state and city funds Of the 590 complete new installations of crossings protected during 1935, the railroads paid for 299 projects, the federal government 239, the states and provinces 46, and cities or counties 6. The cost of 4 installations was divided equally between the state and the railroad; for one installation in Texas, the state paid half and the federal government half; for one installation in California the railroad paid one-fourth and the city three-fourths, and for one project in Canada the costs were divided between the province 30 per cent, the federal government 30 per cent, and the railroad 40 per cent.

Use of Government Funds

The bulk of the government funds for crossing protection came from the federal treasury, financing 239 installations. These funds came from appropriations authorized by the National Industrial Recovery Act, the Public Works Administration, etc., and do not include any appropriations from the Emergency Relief Appropriation Act of 1935, the allotments from which have only recently been announced in part.

In developing crossing protection programs financed by the various federal acts prior to the Emergency Relief Appropriation Act, the southeastern states have been most active, North Carolina having already placed 108 installations in service, South Carolina 15 and Florida 5. Illinois completed 28 of a program totaling 297 crossings during the year, California made 24 installations, Michigan 21 and Kansas 7. The average cost of these installations varied from $2,500 to $3,000 or more depending on the number of tracks.

North Carolina Used Federal Funds Advantageously to Install Flashing-Light Signals at 108 Crossings—Installation Shown on the Seaboard Air Line

The idea that the public should share with the railroads in the cost of highway-railroad crossing protection has been taken up by some of the states, as well as by the federal government. Incidentally, a few of the states, such as Michigan, have paid half the cost of new installations for several years; furthermore, Michigan pays $10 per month toward the maintenance and operation of each installation, a detail that has been overlooked in other state and federal projects. It is interesting to note, however, that during 1935, California paid for 8 crossing protection installations, Kansas 4, Minnesota 5 and Territorial funds paid for three installations of crossing protection on the island of Oahu. In a few instances cities or counties have agreed to share the expense, among which is Hamilton, Ohio, which has agreed to install and maintain automatic gates at a crossing in that city.

The type of protection installed during 1935 included 95 wigwags, 998 flashing lights, 113 rotating disk stop signals, 40 stop-and-go traffic type signals, 26 automatic gates, 2 barriers and 4 flood light illuminations.

Modernization Started in 1935

The participation of the motoring public in the installation of highway-railroad crossing protection recognizes

the fact that the major hazard has arisen from the greatly increased use of motor vehicles on improved highways. The railroads have voluntarily, or at the order of state commissions, provided gates at about 4,700 of the 205,000 crossings in the United States (of which 2,800 are in part-time operation), they have provided watchmen full time at 1,200 crossings and watchmen part-time at 5,000 crossings, 17,000 crossings are protected by automatically-controlled visible signals and 3,600 by audible signals. The annual expenditure of the railroads for the maintenance and operation of crossing protection approximates $18,000,000 to $20,000,000. Even at that, only 30,700 of the 235,000 crossings are protected by

Table of Crossing Protection Projects Showing Distribution of Funds

State	Number of Crossings	Funds			
		Ry.	Fed.	State	County or city
Alabama	1	1	..	..	..
Arkansas	1	..	1	..	..
California	49	13¼	24	8	3¾
Colorado	1	1	..	..	..
Connecticut	7	7	..	..	..
Florida	6	1	5	..	..
Georgia	4	1	2	1	..
Idaho	3	..	2	1	..
Illinois	65	31	28	6	..
Indiana	20	20	..	..	..
Iowa	13	11	2	..	..
Kansas	14	3	7	4	..
Kentucky	5	5	..	..	..
Louisiana	4	1½	1	1½	..
Maine	3	3	..	..	..
Maryland	2	2	..	..	..
Massachusetts	2	2	..	..	..
Michigan	57	36½	17	3	½
Minnesota	11	5	1	5	..
Missouri	8	8	..	..	..
Nebraska	3	2	1	..	..
New Hampshire	7	6	..	..	1
New Jersey	2	2	..	..	..
New Mexico	1	..	1	..	..
New York	46	46	..	..	..
North Carolina	108	..	108	..	..
North Dakota	..	..	..	..	..
Ohio	12	12	..	..	..
Oklahoma	3	1	..	2	..
Oregon	1	1	..	..	..
Pennsylvania	24	19½	1	3½	..
South Carolina	15	..	15	..	..
South Dakota	2	2	..	..	..
Tennessee	11	5	6	..	..
Texas	15	14	½	½	..
Vermont	1	1	..	..	..
Virginia	10	2	8	..	..
Washington	9	2	2	5	..
Wisconsin	17	17	..	..	..
W. Virginia	2	2	..	..	..
Wyoming	..	..	..	..	..
Ontario	10	5	2½	2½	..
Nova Scotia	4	3	1	..	..
New Brunswick	6	4	2	..	..
Manitoba	1	..	1	..	..
British Columbia	1	..	..	..	1
Hawaiian Islands	3	..	..	3	..
Grand Total	590	298¾	239	46	6¼

other than fixed signs, and many of the signal installations are so antiquated as not to be adapted for the heavy motor traffic that has been brought about by the paving of the highways since the signals were installed.

The modernization of existing signals and installations of better forms of protection are, therefore, as much a part of the necessary programs as installations at crossings not now protected automatically. New York now has under way a program of modernizing the signals at all crossings in that state, while Pennsylvania is paying half of the expense of a program to add backlights and standard A. A. R. "Stop on Red Signal" signs at existing signals, such changes having been completed on 38 installations on the New York Central lines in Pennsylvania during 1935.

During the last year complaints have been more numerous regarding unnecessary delays to motorists because crossing signals operate unnecessarily when trains are stopped or are switching on the control sections. The state highway commission of New York recently held a hearing to inquire into this problem. As a matter of fact, the railroads have for several years, especially during 1935, been active in providing special control arrangements and part-time manual control to reduce the unnecessary operation of signals when trains are stopped or switching on the control sections.

Other complaints have arisen concerning the delay to motorists when slow-speed trains approaching a crossing operate the signals for a longer period than high-speed trains, thus delaying motorists, or in some cases, resulting in accidents when motorists get weary of waiting and take chances in crossing. This situation has been aggravated during 1935 by lengthening the control sections to protect the faster train speeds. Special devices and circuits have been developed, and will, no doubt, be placed on the market soon, which are designed to solve this problem by causing the signals to operate a uniform time, say 20 seconds, prior to the arrival of a train at a crossing, regardless of whether the train speed is fast or slow. Such special controls, however, will be expensive to install and will require extra maintenance. In view of the fact that the railroads have already provided the signals for the protection of the highway traffic, it would seem that the motorists should be willing to pay for these refinements to save delay to highway vehicles.

During 1935 several accidents have emphasized the fact that at certain crossings of main highways with multiple-track roads handling heavy traffic, signals alone are not adequate to prevent careless motorists from entering upon tracks when trains are approaching. In view of these circumstances, interest has been renewed in the use of automatic gates and barriers as a means of obstructing vehicles when trains are approaching. With this thought in mind, the Burlington has made two installations of automatically-controlled power gates on the route of one of its streamlined Diesel propelled Zephyr trains, the Missouri Pacific made a similar installation at Kirkwood, Mo., and the C. N. S. & M., installed automatic gates at three crossings, while the L. & N., which already has several installations, completed another installation of automatic gates in Tennessee.

Likewise, during 1935, further improvements were made in barrier protection for crossings, a set of barriers being installed to replace signals at a crossing on the Chicago & North Western in Des Moines, Iowa, while installations are planned on several other roads. As further evidence of the renewed interest in the use of automatic gates, the A. A. R. Joint Committee on Grade Crossing Protection has recently been given an assignment to study crossing gates with the view to the preparation of a set of requisites for the operating characteristics of an acceptable standard automatic gate.

Better Fixed Signs

As has been proved in recent years, especially on the Erie, safety can be increased by the use of reflector-type fixed signs. In view of the fact that more than 205,000 crossings are protected by fixed signs only, and with no hope of separating the grades or installing automatic protection at any great proportion of these crossings, this subject has been given special attention by the National Conference on Street and Highway Safety, as well as by the recently organized Conference on Accident Prevention.

The practice recommended and followed extensively on some roads, such as the Erie, is to provide reflector-button type approach warning signs, according to the National Conference on Street and Highway Safety standards, as well as reflector button crossbuck signs at crossings. The reflector-type signs are effective under the glare of automobile headlights at night. The state of Illinois included, in its 1935 federal program, reflec-

tor-button crossbuck sign installations for 354 crossings.

From the above it may be seen that the problem of protecting railway-highway grade crossings is now receiving more attention from a larger number of agencies than ever before, and that as a result, marked progress is being made in the development of measures for the protection of these crossings. Equally important is the increasing recognition on the part of the public and its representatives that it should bear the major cost of such projects.

Crossing Protection Installations in 1935

Road	State	Source of Funds	No. of Crossings Protected	No. of Wig-Wag Signals	No. of Flashing-Light Signals	No. of Rotating Stop Sign Signals with Flashing Lights	No. of Traffic Type Stop and Go Signals	No. of Electrical Operated Gates	
A. T. & S. F.	Kan.	Ry.	2	2	..	..	..	..	
	Okla.	Ry.	1	1	..	..	..	..	
	Kan.	Fed.	1	2†	..	..	..	..	
	N. M.	Fed.	1	2†	..	..	..	..	
	Tex.	Ry.	2	2	..	..	..	..	
	Cal.	County	1	..	..	2	..	..	
	Cal.	Ry.	1	1	..	..	..	..	
	Cal.	State	2	4	..	..	..	..	
A. C. L.	Va.	Fed.	5	..	11†	..	..	..	
	N. C.	Fed.	18	..	38†	..	..	..	
	S. C.	Fed.	4	..	11†	..	..	..	
	Fla.	Fed.	5	..	8†	4	..	..	
B. & O.	N. Y.	Ry.	2	..	5†	..	..	..	
	Ohio	Ry.	3	..	10	..	..	..	
	W. Va.	Ry.	1	..	2	..	..	..	
	Va.	Fed.	1	..	2†	..	..	..	
B. & M.	Me.	Ry.	1	..	2	..	..	..	
	N. H.	Ry.	2	..	4	..	..	..	
	N. H.	Town	1	..	3	..	..	..	
	Vt.	Ry.	1	..	2	..	..	..	
C. N.	Ont.	Ry. & Fed.	3	3	..	..	..	..	
	Ont.	Ry. & Fed.	1	..	1	..	..	..	
	N. H.	Ry.	4	..	10	..	..	..	
	N. S.	Ry.	2	..	..	..	..	4	
	N. S.	Ry. & Fed.	2	2	..	..	..	..	
	N. B.	Ry. & Fed.	2	2	..	..	..	..	
	N. B.	Ry. & Fed.	2	2	..	..	..	..	
G. T. W.	Mich.	Ry. & City	1	..	2†	..	..	..	
	Mich.	Ry.	1	..	2†	..	..	..	
	Mich.	Fed.	4	..	8†	..	..	..	
	Ill.	Fed.	3	..	6†	..	..	..	
C. P.	N. B.	Ry.	2	2	..	..	..	..	
	Ont.	P. P. R.	1	1	..	..	..	..	
	Ont.	P. R.	1	1	..	..	..	..	
	Man.	Fed.	1	2	..	..	..	..	
C. & O.	Va.	Ry.	2	..	6†	..	..	..	
	Ky.	Ry.	1	..	4†	..	..	..	
C. & E. I.	Ill.	Fed.	5	..	11†	..	..	..	
	Ind.	Ry.	5	..	10†	..	..	..	
C. & I. M.	Ill.	Fed.	1	..	2†	..	..	..	
C. & N. W.	Iowa		1	..	..	..	..	2	(Barriers)
	Mich.	Fed.	3	..	6†	..	..	..	
	Wis.	Ry.	7	14	..	..	..	..	
C. & W. I.	Ill.	Ry.	1	..	3	..	..	..	
C. B. & Q.	Ill.	Ry.	1	..	..	..	..	2	
	Ill.	Ry.	1	..	..	..	..	4	
	Ill.	Ry.	7	..	14†	..	..	..	
	Ill.	Ry.	2	..	3	..	..	..	
	Neb.	Ry.	1	..	2	..	..	..	
	Wis.	Ry.	4	..	8	8	..	..	
	Iowa	Ry.	1	..	..	..	..	2	(Floodlight)
C. G. W.	Iowa	Fed.	2	..	4†	..	..	..	
	Iowa	Ry.	7	..	3†	11	..	..	
C. I. & L.	Ind.	Ry.	1	..	..	..	..	Bell	
	Ind.	Ry.	1	..	2*	..	..	..	
C. M. St. P. & P.	Idaho	Fed.	2	..	..	4	..	..	
	Ill.	Ry.	10	..	1†	19	..	..	
	Iowa	Ry.	2	..	..	4	..	..	
	Mich.	State	3	..	6†	..	..	..	
	Minn.	Ry.	3	..	..	6	..	..	
	Minn.	State	2	..	..	4	..	..	
	S. D.	Ry.	2	..	..	4	..	..	
	Wash.	State	5	..	10†	..	..	..	
	Wis.	Ry.	4	..	..	8	..	..	
C. N. S. & M.	Ill.	Ry.	2	..	..	..	..	4	
	Wis.	Ry.	1	..	..	..	..	2	
C. R. I. & P.	Ill.	Fed.	10	..	22†	..	..	..	
	Kan.	Fed.	4	..	8†	..	..	..	
	La.	Fed.	1	..	2*	..	..	..	
C. S. S. & S. B.	Ind.	Ry.	2	..	4	..	..	..	
D. & H.	N. Y.	Ry.	16	..	38†	..	..	..	
D. L. & W.	N. Y.	Ry.	2	..	4†	..	..	..	
	N. Y.	D. L. & W. and L. V.	1	..	2†	..	..	..	
	Pa.	D. L. & W. and State	1	..	2†	..	..	..	
D. S. S. & A.	Mich.	Fed.	2	..	4†	..	..	..	
E. J. & E.	Ill.	Ry.	1	..	2*	..	..	..	
Erie	Ind.	Ry.	1	..	2*	..	..	..	
	Ind.	Ry.	1	..	..	..	..	Stop Signs	
F. E. C.	Fla.	Ry.	1	..	2	..	..	..	
Ft. W. & D. C.	Tex.	State & Fed.	1	..	2†	..	..	..	
G. N.	Wash.	Fed.	2	..	..	5	..	..	
	Minn.	State	1	..	..	2	..	..	
	B. C.	City	1	1	..	..	..	..	
I. C.	Ill.	State	4	..	11‡	..	..	..	
Ind. R. R.	Ind.	Ry.	3	..	5*	..	..	..	
K. & I. T.	Ky.	Ry.	1	..	2	..	..	..	
L. S. & I.	Mich.	Ry.	1	..	8*	..	..	..	
L. & N. E.	Pa.	Fed.	1	..	2†	..	..	..	
	Pa.	State and Ry.	1	..	2†	..	..	..	
L. V.	Pa.	State and Ry.	1	..	2†	..	..	..	
	N. Y.	Ry.	2	..	4†	..	..	..	

Road	State	Source of Funds	No. of Crossings Protected	No. of Wig-Wag Signals	No. of Flashing-Light Signals	No. of Rotating Stop Sign Signals with Flashing Lights	No. of Traffic Type Stop and Go Signals	No. of Electrical Operated Gates	
L. & A.	La.	State	1	..	2	..	..	..	
L. & N.	Ala.	Ry.	1	..	2	..	..	..	
	Ill.	Fed.	1	..	2†	..	..	..	
	Ky.	Ry.	2	..	4	..	..	..	
	Tenn.	Fed.	1	..	..	..	..	2	
Me. C.	Me.	Ry.	2	..	5	..	..	..	
M. & St. L.	Ill.	Fed.	3	..	6†	..	..	..	
	Minn.	Ry.	2	..	..	4	..	..	
	Minn.	Fed.	1	..	..	2	..	..	
M. St. P. & S. S. M.	Mich.	Fed.	3	..	6†	..	..	..	
	Minn.	State	2	..	4*	..	..	..	
	Ill.	Fed.	2	..	4†	..	..	..	
	Wis.	Ry.	1	..	2*	..	..	..	
M-K-T	Tex.	Ry.	1	1	..	..	..	..	
M. P.	Ark.	Fed.	1	..	2†	..	..	..	
	Colo.	Ry.	1	..	2*	..	..	..	
	Kan.	Fed.	2	..	4†	..	..	..	
	Mo.	Ry.	2	..	4*	..	..	..	
	Mo.	Ry.	4	..	8†	..	..	..	
	Mo.	Ry.	1	..	..	..	..	2	
	Neb.	Fed.	1	..	2†	..	..	..	
G. C. L.	Tex.	Ry.	1	..	2*	..	..	..	
I-G. N.	Tex.	Ry.	3	..	7*	..	..	..	
M. & O.	Ill.	State	2	..	4†	..	..	..	
Monongahela	Pa.	Ry.	1	..	2†	..	..	..	
N. C. & St. L.	Tenn.	Fed.	4	..	8*	..	..	..	
	Tenn.	Ry.	2	..	4*	..	..	..	
	Ga.	Ry.	1	..	4*	..	..	..	
N. Y. C.	N. Y.	Ry.	9	..	19†	..	..	..	
	Pa.	State & Ry.	16	..	16†	..	..	Stop signs and back lights added	
	Pa.	State & Ry.	22	..	44†	..	..	Stop signs added	
	Ohio	Ry.	7	..	14†	..	..	..	
M. C.	Mich.	Ry.	4	..	8†	..	..	..	
	Mich.	Ry.	17	..	34†	..	34	..	
	Mich.	Ry.	1	..	..	..	2	..	
	Mich.	Fed.	1	..	3†	..	..	..	
	Ont.	Ry.	1	2	..	..	..	..	
C. C. C. & St. L.	Ind.	Ry.	2	..	4	..	..	..	
	Ind.	Ry.	1	..	..	..	..	2	(Floodlights)
N. Y. C. & S. L.	Ind.	Ry.	2	..	4*	..	..	..	
	Ohio	Ry.	1	..	2	..	..	..	
N. Y. N. H. & H.	Conn.	Ry.	7	..	17†	..	..	6	
	Mass.	Ry.	2	..	4†	..	..	..	
N. Y. O. & W.	N. Y.	Ry.	11	..	31†	..	..	..	
	Pa.	Ry.	1	..	2†	..	..	..	
N. & W.	N. C.	Fed.	3	..	6†	..	..	..	
N. P.	Wash	Ry.	2	..	4	..	..	..	
N. S.	N. C.	Fed.	23	..	46†	..	..	..	
	Va.	Fed.	1	..	2†	..	..	..	
O. R. & L.	H. I.	Terr.	3	3	..	..	..	..	
P. E.	Cal.	State	3	6†	6†	..	..	..	
	Cal.	State	1	2†	..	..	..	..	
	Cal.	County	2	3	..	..	..	..	
	Cal.	City & Ry.	1	2†	2†	..	..	..	
Penna.	Pa.	Ry. & State	1	..	2†	..	..	..	
	Pa.	Ry.	11	..	24†	..	..	..	
	Ohio	Ry.	1	..	8*	..	..	..	
	Ill.	Ry.	5	..	15†	..	..	..	
	Ill.	Ry.	1	..	2*	..	..	..	
	Ind.	Ry.	1	..	2*	..	..	..	
	Mich.	Ry.	8	..	19†	..	..	..	
	N. Y.	Ry.	3	..	6†	..	..	..	
P. M.	Mich.	Ry.	4	..	12†	..	..	..	
	Mich.	Fed.	4	..	11†	..	..	..	
	Ont.	Ry. & Prov.	3	5	..	..	..	..	
Reading	Pa.	Ry. & State	3	..	7†	..	..	..	
	Pa.	Ry.	3	..	8†	..	..	..	
C. R. N. J.	N. J.	Ry.	1	..	2	..	..	..	
	N. J.	Ry.	1	..	2*	..	..	..	
St. L.-S. F.	Mo.	Ry.	1	..	2†	..	..	..	
	Okla.	State	2	..	4*	..	..	..	
	Tenn.	Ry.	1	..	2*	..	..	..	
S. A. L.	N. C.	Fed.	28	..	33†	..	..	..	
	S. C.	Fed.	6	..	12†	..	..	..	
	Ga.	State	1	..	2†	..	..	..	
Southern	Va.	Fed.	1	..	2†	..	..	..	
	N. C.	Fed.	36	..	81†	..	..	..	
	Ga.	Fed.	2	..	4†	..	..	..	
	Ill.	Fed.	3	..	7†	..	..	..	
	Tenn.	Ry.	2	..	..	..	4	..	
	Ky.	Ry.	1	..	2†	..	..	..	
	Tenn.	Fed.	1	..	2†	..	..	..	
	S. C.	Fed.	5	..	12†	..	..	..	
S. P.	Cal.	Ry.	11	11	4	6	..	..	
	Cal.	State	1	..	..	2	..	..	
	Cal.	Fed.	24	4	26	16	..	..	
	Ore.	Ry.	1	..	..	2	..	..	
T. & N. O.	Tex.	Ry.	1	1	..	..	..	..	
T. & P.	Tex.	Ry.	4	4	4	..	..	..	
	Tex.	Ry.	2	..	4*	..	..	..	
	La.	Ry.	1	..	2*	..	..	..	
	La.	Ry. & State	1	..	2*	..	..	..	
U. P.	Kan.	Ry.	1	2	..	..	..	..	
	Kan.	State	4	..	9†	..	..	..	
	Neb.	Ry.	1	2	..	..	..	..	
O. W. R. & N.	Idaho	State	1	..	2	..	..	..	
L. A. & S. L.	Cal.	State	1	1	..	..	..	..	
	Cal.	Ry.	1	2	..	..	..	..	
W. M.	Md.	Ry.	2	..	5†	..	..	..	
	W. V.	Ry.	1	..	6†	..	..	..	
Totals			628	81 14† 95	792† 90* 116 998	113	40	26	

Legend:

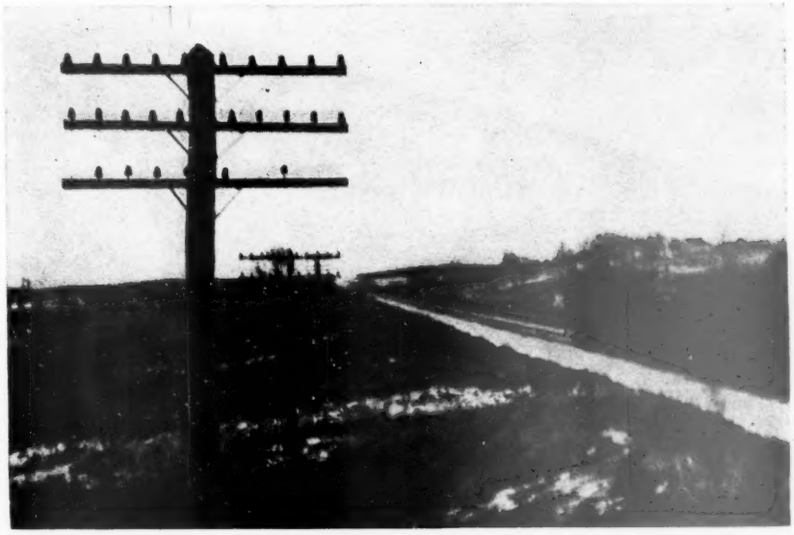
*=New A.A.R. automatically-controlled-illuminated STOP sign used in conjunction with regular wig-wag or flashing-light signal.

‡=New A.A.R. button-type reflector sign reading "Stop on Red Signal" used in conjunction with regular wig-wag or flashing-light signal.

T. & T. Activity Increased in 1935

Interest revived in carrier-current telephony—Pole-line renewals in 30 per cent upturn

By O. C. French
Associate Editor



Fast Freight Service Demands Adequate Communication Facilities

ALTHOUGH there was a distinct increase in the amount of outside plant replacement in the railway communication field during 1935, new construction remained at a relatively low level. This is shown by reports received from 115 railroads in the United States and Canada, which constitute the basis of this sixteenth annual statistical review of this branch of the railway field.

In spite of the apparent quiescence reflected by certain of the statistics, it is not to be concluded that the railroad communication departments have not been alive to the new developments that are taking place so rapidly, not only in this field, but in railroad operation as a whole. The latter are exerting a pronounced influence on the services now being demanded of telephone and telegraph facilities. For example, the fact that freight trains are now being handled at or near what were considered passenger-train speeds has necessitated the handling by wire of certain railroad business which formerly was handled satisfactorily by mail.

Another trend that has become increasingly evident in late years is the fact that telegraph facilities between divisional offices are no longer considered adequate. Long-distance telephone circuits are, therefore, being provided, and in many cases these are being connected with local PBX or PAX systems to provide the flexibility necessary for efficient use. As the advantages of telephone over telegraph service tend to reduce the amount of business handled by telegraph, the possibility arises of telegraph wires remaining idle, especially at night, while long-distance telephone lines become overloaded during business hours. Considerations such as these point to the problem of allocating the wire facilities most efficiently. Railroad communication men have been concerned with these and related problems during 1935.

Table A—Principal Increases in Plant Facilities During 1935, As Compared with 1934

	1935	1934
Miles of new or rebuilt pole line:		
Railroad owned	1,577	
Commercially owned	3,593	
Jointly owned	1,766	
Total	6,936	5,314
Mileage of new copper wire:		
Railroad owned	1,662	
Commercially owned	543	
Total	2,205	3,141
Gross increase in miles of road dispatched by telephone	166	174
Increase in miles of long-distance telephone circuits	4,445	3,314
New mileage of telegraph circuits, all types	472	818
Increase in miles of printing telegraph circuits	4,436	5,479
Number of new printing telegraph machines	83	43
Increase in miles of new carrier-current telephone in the United States	604	0

Table B—Principal Copper Wire Installations Completed in 1935

Railroad	Miles of New Copper Wire: Railroad Owned	Commercially Owned	Total
Canadian National	24	203	227
Canadian Pacific	56	—	56
Chicago & Eastern Illinois	18	103	121
Delaware & Hudson	54	8	62
Gulf Coast Lines	427	—	427
Long Island	120	—	120
Minneapolis, St. Paul & Sault Ste. Marie	66	—	66
Missouri Pacific	487	—	487
Southern	—	138	138
Texas & New Orleans	106	—	106

Table C—Printing Telegraph Installations Completed in 1935

Railroad	Miles of Circuit	Number of Machines
Atchison, Topeka & Santa Fe	2,955	46
Boston & Maine	115	3
Central Vermont	28	3
Cleveland, Cincinnati, Chicago & St. Louis	128	2
Long Island	20	14
New York Central	635	4
Pennsylvania	31	8
Southern	315	—
Texas & New Orleans	210	3

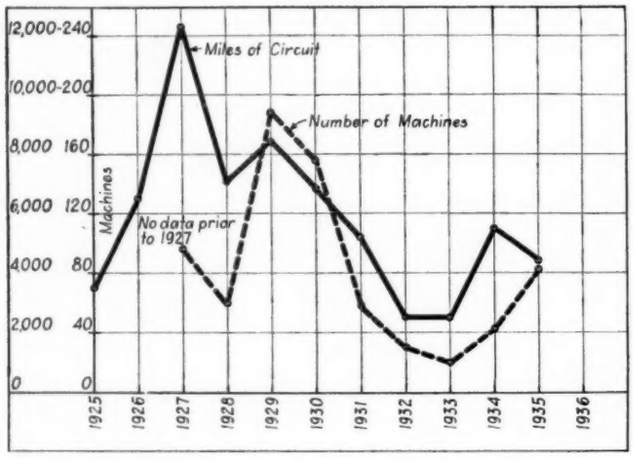
Telephone Facilities Expanded

The tendency of the railroads to curtail the extension of telegraph facilities is evidenced by the fact that since

1931, when the mileage of new telegraph circuits totaled 13,602, there has been a steady decline in new telegraph line construction. In 1935 this mileage dropped to 472, or 42 per cent less than in 1934. In contrast, although the mileage of new long-distance telephone circuits declined from 7,395 in 1931 to a low of 1,923 miles in 1933, it increased in 1934 to 3,314 miles and again in 1935 to 4,445 miles, the latter a 34 per cent increase. Of course, in certain instances the use of telegraph facilities is more economical; there are also some services to which they are better adapted than telephone facilities. For these reasons, the two branches of the service necessarily supplement one another.

Joint Telegraph and Telephone Wires

However, an important factor in the consideration of increased telephone circuit mileage is the fact that the same wires can be used for both services. Of the total mileage of new long-distance circuits provided in 1935, the reports show that 862 miles of single-line telegraph circuits were converted for use on 431 miles of two-wire telephone circuit by proper alteration and transposition, the two wires being simplexed to regain one telegraph



New Telegraph-Printers Installed Since 1927, and the Circuit Mileage Required

circuit. A total of 1,303 miles of telephone circuit was obtained by outright conversion, without retaining the telegraph connection. Of the remaining new telephone circuits, 1,132 miles were secured by the Seaboard Air Line by imposing a phantom circuit on new and existing telephone channels. Other new telephone circuits were obtained by the assignment of wires from commercial companies and by new construction, both in small amounts.

From these considerations the fact is evident that the changes now taking place in the railroad communication service are those which can be made with minimum capital expenditures, and these are being done with considerable profit and improvement in the service. Therefore, the figures reflecting new wire installations are not necessarily indicative of the improvements actually being effected. Obviously, projects that entail relatively little expense have fitted in with the limited budgets of the last four years.

Pole-Line Construction Increased

Six of the items listed in Table A show increases over the corresponding figures of the previous year. A significant item in this table is the total mileage of new or rebuilt pole line. The 6,936 miles reported exceeds the 1934 figure by 30 per cent, and was itself an increase over that of the previous year, 1933. This increase is accounted for by the 81 per cent increase in the mileage rebuilt by commercial companies and a 49 per cent increase in that jointly owned. These two increases offset a 27 per cent reduction in the figure for railroad-owned pole lines.

The net increase in pole-line reconstruction indicates that the commercial companies are better able to improve their outside plant facilities and that the railroads are sharing in these improvements to a greater extent than during 1934. The total of 6,936 miles is larger than any corresponding figure since 1930, when 9,024 miles of line were reported as new or rebuilt.

In addition to the items listed in Table A, the Chicago, Rock Island & Pacific reports that in the first 10 months of 1935 the regular section linemen of this road set 2,968 new poles, reset 5,224, and stub-reinforced 970 poles. On the basis of 35 poles per mile, these spot renewals are equivalent to 262 miles of line.

Mileage of New Copper Wire Installed

The mileage of new copper line wire installed on all roads totaled 2,205, a 30 per cent reduction from 1934. Installations exceeding 50 miles are shown in Table B. The Missouri Pacific and its subsidiary, the Gulf Coast Lines, reported the largest increases in copper-wire mileage. Extensive increases in copper wire mileage are, of course, associated with prosperity years.

Although the new mileage of telephone-dispatched road is substantially the same as in the previous year, the Seaboard Air Line accounted for the entire amount, 166 miles. According to the Interstate Commerce Commission report of January 1, 1935, the total mileage of road over which train orders are dispatched by telephone decreased from 151,300 in 1934 to 151,098 in 1935. However, a greater decrease was reported in the mileage dispatched by telegraph, which amounted to 94,627 in 1934 and 93,907 in 1935, as of January 1 of these years. The total mileage reported was 237,126, indicating that some roads use both telegraph and telephone on certain districts.

Telegraph-Printer Service Extended

The number of telegraph-printer machines placed in service during 1935 was nearly double that for 1934, although the mileage of circuit required was somewhat reduced. The accompanying diagram illustrates the trend of these installations, beginning with 1925. From the low point of 1933, the curves show a definite upswing. The relation of miles of circuit involved to the number of machines varies widely. For example, in its highly-developed suburban territory, the Long Island installed 14 machines requiring but 20 miles of circuit, while the New York Central installed 4 machines requiring 625 miles of telegraph circuit.

Of the 83 machines installed last year, the Atchison, Topeka & Santa Fe accounted for more than half, installing nearly three times the number it reported for 1934. The 46 machines are distributed at divisional headquarters throughout the system and are employed in a wide variety of message service. One installation links the system general office at Topeka, Kan., with the store department in another part of the city. All of the telegraph-printer circuits on the system are full duplex, operable in both directions simultaneously, and all circuits are equipped with motor control devices which enable the sending office to start and stop the motor on the distant receiving machine. Receiving printers are equipped with single-copy continuous-roll paper which obviates the need for continuous manning during reception. Additional copies required in case of multiple-

address messages are provided by means of duplicating machines.

The 2,955 miles of circuit required for the Santa Fe installations were obtained by converting existing lines for the new service, very little new construction being required. On this road the increased message capacity obtained by means of printer operation released other circuits that were formerly overloaded, and permitted the extension of long-distance conversation channels without appreciable new construction.

Whereas in 1934 only five roads made printer installations, nine roads extended the use of these machines in 1935. Table C lists all of those reported.

Carrier-Current Telephone on Two Roads

During the last year the Illinois Terminal and the Rock Island initiated carrier-current telephone service between certain operating points. Although the commercial communication companies and the Canadian railroads have made extensive use of this system for several years, the latter for commercial service, these two installations are the first on record that are being used exclusively for railroad business in the United States.

The Illinois Terminal installed 190 miles of carrier telephone circuit which is being used for intercommunication between the terminals and points beyond the private wire system. This installation provides a much needed through service between divisional offices, relieving badly overloaded physical circuits.

The Rock Island installation embraces 414 miles of two-wire carrier telephone circuit superimposed on existing long-distance circuits of the usual character. This also relieves a badly overloaded long-distance channel. The new circuit extends from Chicago to Trenton, Mo., from which point connection is made to Kansas City. Long-distance telephone service is provided between Chicago and Davenport, Iowa, including Silvis, Ill., near by, and the division offices in Kansas City.

The Canadian National completed a 311-mile extension of high-frequency carrier-current telegraph facilities in commercial service.

Railroad communication officers maintained close contact during the year with new developments of the commercial companies, largely through the work of the Telegraph and Telephone section of the Association of American Railroads. Among the developments have been several technical refinements in equipment for improving telephone service, including new repeater station equipment, the application of dial selectors to telegraph printers, etc. The development of ultra short-wave radio telephone equipment for freight trains is being pursued actively by the manufacturers.

Facsimile Telegraph Service the Outstanding Event

An outstanding event of the year with respect to the communication field was the initiation of commercial facsimile telegraph service on November 14, between New York, N. Y., and Buffalo. Although this service has been possible for several years, the recent developments of the Western Union Telegraph Company have made it commercially feasible. It is quite probable that the railroads may at some future time find this development useful for the rapid transmission of exact copies of important documents or even ordinary messages and letters, including signatures.

In conclusion, it is evident that the modern tempo of handling railroad business demands an ever increasing amount of wire communication to replace mail communication which is now too slow for effective results. When the various methods of utilizing existing wires for dual purposes become fully exploited by the railroads, and as demands are made for additional communication channels, new wires and equipment will have to be provided. The prospects, therefore, for continued expansion in the railroad communication field during the coming year are good, depending in some degree on the extent of business improvement.

Equipment Prices

DATA upon which to base reliable conclusions as to trends in railway equipment prices were even scarcer in 1935 than they were in 1934. This arose from the fact that, in the first place, orders were fewer in 1935 than in the preceding year and, secondly, from the fact that price information is obtainable only as it is disclosed in finance reports issued by the Interstate Commerce Commission when equipment trust certificates or other securities are authorized in connection with the acquisition of the equipment. If such securities are not issued, then the prices paid do not become a matter of public record.

Furthermore, the Commission does not always disclose unit prices but may limit its disclosure to the total expenditure involved. When the equipment is uniform in character, the unit price may still be calculated by dividing the total cost by the number of units. If the equipment concerned in any one issue of securities is heterogeneous, as it usually is, a lump sum total is of no value whatsoever in arriving at cost information for the different types involved. An "average" price, for instance, of 11 diesel-electric locomotives, eight of which were of 600 hp., one of 2,000 hp. and two of 1,800 would not convey any very clear idea as to trends in prices of such equipment.

The accompanying table sets forth a few of the fragmentary price data which were obtained from reports of the Interstate Commerce Commission with descriptive data from other sources. With due allowance for their inadequacy, they may still serve to throw some light on price tendencies during the year.

Some 1935 Equipment Prices

LOCOMOTIVES

Type	Number	Service	Weight lb.	Tractive Force Inc. Booster lb.	Unit Cost
4-8-4	5	Psgr.	475,000	81,035	$120,898

FREIGHT CARS

No.	Kind	Capacity lb.	Construction	Weight lb.	Unit Cost
100	Auto	100,000	Steel Frame	54,800	$3,183*
50	Stock	80,000	Steel Frame	42,000	2,066
75	Flat	100,000	Steel Underframe	46,400	2,116
2000	Hopper	100,000	Steel	40,500	1,995
1500	Hopper	100,000	Steel	40,500	2,037
1500	Hopper	100,000	Steel	40,500	2,019
500	Box	80,000	Steel	43,700	2,135

* Cost including loaders.

PASSENGER TRAIN CARS

No.	Description	Cost Each
55	40 ft. 8¼ in. Steel Milk Cars, Wt. 60,000 lb.	$2,607†
4	Light Wt. Gasoline Rail Cars Seating 57 Passengers, With Baggage Compartment	23,072
1	Stream-lined, Diesel-electric, 5-car train	423,085

† Exclusive of cost of trucks.

New Bus Routes Were Inaugurated and Existing Lines Extended During the Year

Railway Motor Transport Had a Boom Year

Purchase of new companies, expansion of existing lines, and revived interest featured 1935

By Charles Layng

Motor Transport Editor

RAILWAY motor transport made greater progress in 1935 than in any year since the railways first became interested in highway transportation. The impetus for this development was provided largely but not entirely by the Motor Carrier Act.

Their investment was doubled during the year. The provision of new services and the expansion of existing services were reflected in renewed purchases of automotive equipment by the railways. In addition, the railways initiated a campaign to modernize the highway equipment which they already owned.

The unprecedented expansion of railway-owned bus companies, together with the purchase of numerous independent bus companies by the railways, show the trend in the passenger transportation field. In freight transportation, the growth of storedoor collection and delivery, which was one of the features of 1934, continued with undiminished vigor in 1935, culminating with the recommendation of the Association of American Railroads favoring a nation-wide pick-up and delivery service. During the year, too, the legal situation in this regard was clarified by a clear-cut decision in favor of the Boston & Maine, whose collection and delivery service was bitterly attacked by independent truck interests, but was sustained in every point by the Interstate Commerce Commission, docket No. 26283.

This spread of collection and delivery service was marked by the trend last year toward direct ownership of the trucking companies providing such service. Even in cases where this service is contracted, the trend toward railway supervision of operations and purchases has been marked.

The year also witnessed a marked increase in the provision of station-to-station service with more roads than heretofore taking advantage of the possibilities, first made apparent in New England, of establishing concentration and distribution points at which merchandise trains gather and set out cars. It has been possible to operate these trains at passenger train speeds by eliminating local stops and providing truck service between the local stations and the concentration and distribution centers. The theory once held that such a joint service could only be successful in congested, thickly settled New England has been proved incorrect by successful operations of this kind in California, Texas, Kansas, Mississippi, Canada and other areas which could hardly be termed over-populated.

Specific Bus Activities

The purchase of the largest independent bus operator in the country by a railway company naturally headlined any account of railway passenger motor transport dur-

ing 1935. This, however, was only a part of the railway expansion in the bus field during the year. After railway participation in passenger motor transport had been practically static for some years, the few large operations remaining the same as they had been, without much expansion of any sort, the activities last year offer a marked contrast.

The large purchase was made by the Atchison, Topeka & Santa Fe, which, in acquiring, through its subsidiary, the General Improvement Company, 23,000 shares of stock of the Southern Kansas Stage Lines, also acquired the bus subsidiaries of the Southern Kansas, namely, the Blue Coach Motor Lines, operating between Chicago and Kansas City; the Cardinal Stages, operating in northern Kansas and eastern Colorado; and the Santa Fe Trail Stages, operating between Denver and Los Angeles, thus establishing a potential transcontinental bus line roughly paralleling its railway lines. Through this same purchase, the Santa Fe also acquired a 50 per cent interest in the Southern Kansas Greyhound Lines, operating between Kansas City and Tulsa, making this line, like so many other Greyhound subsidiaries, 100 per cent railway owned, the other 50 per cent of the stock being held by the Southwestern Greyhound Lines, a St. Louis Southwestern subsidiary.

Through its wholly-owned subsidiary, the Santa Fe Transportation Company, the Atchison, Topeka & Santa Fe also began the use of buses and trucks in train replacement this year, the operations being marked by the use, in some cases, of a combination bus-truck unit, capable of handling 13 passengers and 3 tons of freight, express or mail.

The Burlington Expanded

A development of equal importance was the expansion of the Burlington Transportation Company, a Chicago, Burlington & Quincy subsidiary. Until the spring of 1934, the operations of this company were confined to train-replacement service. Beginning then, however, through runs were established for distances of a few hundred miles and this was followed by extensions of through service to Omaha, Kansas City and Chicago.

Beginning with the first of 1935, however, through service from Chicago to Los Angeles was established through the purchase of the franchises, but not the equipment, of the Columbia Nitecoach Lines. At first, this was operated on a tri-weekly basis. However, with the purchase and delivery of a fleet of modern, streamlined buses built especially for transcontinental service, daily runs were soon inaugurated, and these were supplemented, some months later, by the establishment of a route between Salt Lake City and San Francisco, making close connections with the transcontinental buses from and to Chicago. Meanwhile, many other through routes were being established along the Burlington lines. The Burlington also participated, with the Missouri Pacific and the Denver & Rio Grande Western, in the establishment of the Denver-Salt Lake Stages, a new line operating over the short highway route via Berthoud Pass.

Activity on Other Lines

The Missouri Pacific Transportation Company, bus operating subsidiary of the Missouri Pacific, also expanded its lines materially elsewhere, in addition to the joint operation named in the preceding paragraph, establishing, during 1935, through routes into the Rio Grande valley of southern Texas and between Kansas City and Pueblo, where connection is made with some of the numerous and actively successful bus subsidiaries of the Denver & Rio Grande Western. This latter extension, with the new Burlington schedules, provides close connections for transcontinental bus passengers between St. Louis and San Francisco, going one way via Tennessee Pass and returning via Berthoud Pass, or vice versa.

In the East, the New York Central entered the bus operating picture by consummating an agreement with the Eastern Greyhound Lines, whereby rail-highway co-ordination of various sorts was made possible. The name of the bus company was thereupon changed to the Central Greyhound Lines.

The Boston & Maine Transportation Company and the New England Transportation Company both engaged in an equipment modernization campaign, which included the purchase of a number of new coaches of modern design.

Most of the eastern railways' bus operating subsidi-

Pick-Up and Delivery Service Made Great Strides in 1935

aries have been established for some time, and all of them continued their expansion along the lines of new routes, faster and more attractive service and by the provision of better station facilities.

While these developments are the more outstanding, they are by no means all there were in the rail-highway passenger transportation field. Wholly or partially owned railway bus subsidiaries, such as the Northland Greyhound Lines, the Interstate Stages, the Pacific Greyhound Lines, the Boston & Maine, the Louisiana & Arkansas, the Northern Pacific, the Norfolk Southern, the New Haven and the Eastern Tennessee & Western North Carolina transportation companies were all active in the extension of lines, modernizing equipment and providing new and modern station facilities.

In general, it may now be said that a veritable network of railway-owned bus lines extends across the country. Such bus lines operate in every state, and the expansion begun this year after a long period of inactivity gives every indication of continuing unabatedly in 1936.

Truck Activities

While the rapid extension of pick-up and delivery service and the announced intention to make such service nation-wide as rapidly as possible occupy the spotlight on the rail-highway freight transportation stage, other highly important developments have also taken place. Among these, the Burlington Transportation Company established a freight division by the purchase of the Merchants Cartage Company and the Corn Belt Transportation Company. This company also has options on several other trucking lines.

The Atchison, Topeka & Santa Fe, which, through the Santa Fe Transportation Company, established a truck service on a contract basis in the San Joaquin valley in California in October, 1934, purchased equipment of its own to operate this service in the spring of 1935. Through the acquisition of the Southern Kansas Stages in the fall, the A. T. & S. F. became a large truck operator, with lines serving Kansas City, Ft. Smith, Oklahoma City, Joplin, Wichita, St. Joseph, Enid, Omaha, Lincoln and many other points.

Smaller operations, established or expanded during the year, were numerous, such as those of the Northern Pacific, the Kansas City Southern, the Gulf, Mobile & Northern and the East Tennessee & Western North Carolina.

The Pacific Motor Transport Company and the Pacific Motor Trucking Company, truck operating subsidiaries of the Southern Pacific, continued their expansion during the year. The latter company now owns some 250 units of highway freight equipment and engages profitably in almost every conceivable variety of truck service, although its principal function continues to be rail-highway co-ordination. As a result of its general growth and the obtaining of a contract for hauling materials from the railhead to the Los Angeles aqueduct, this company is probably among the leading trucking companies in the United States from the standpoint of tonnage handled.

Of particular interest to the railway field also was the establishment of a transcontinental truck line this year under the management of J. L. Keeshin, who maintains the attitude of being entirely willing to co-operate with the railways, and has backed up this attitude by a successful arrangement with the Rock Island for trailer ferry service, which has been described in the *Railway Age* more than once, during the nearly two years that it has been in operation.

Still another development of particular interest occurred on the New York, New Haven & Hartford, one of the pioneers in the rail-truck field through its subsidiary, the New Haven Transportation Company. The railway again pioneered by purchasing more than 50 trucks for use by its maintenance of way department in increasing the efficiency of its track gangs by providing greater flexibility of movement.

The Future

The developments last year indicate clearly that the rail president who said some months ago that the Motor Carrier Act put the railways into bus and truck operation on a large scale was a reliable prophet. Further expansion along these lines in 1936 seems almost inevitable although, even with the present situation continuing to exist, the railway bus and truck market is a large one. That truck and bus manufacturers are alert to the future possibilities of this market, as well as to its existing fertility, is indicated by the fact that at least three manufacturers are now engaged in the formation of special railway sales departments.

Orders for Highway Vehicles

Railways, together with their subsidiaries and affiliated motor transport companies, ordered during 1935 a total of 280 buses, 543 trucks, 106 tractors, 174 trailers and 111 automobiles, according to replies received by the *Railway Age* in response to questionnaires seeking such data.

All of the foregoing totals, except that for buses, are substantially in excess of the orders reported for 1934. In an attempt to make the 1935 survey a more comprehensive one questionnaires were last year forwarded to all bus and truck companies in which the railroads are shown, by Co-ordinator Eastman's 1934 report on Regulation of Transportation Agencies, to have an interest. The returns from these questionnaires sent to railroad affiliates were somewhat disappointing—less than 50 per cent replied—and thus the accompanying tabulation must again be presented with the stipulation that these data "continue to be somewhat fragmentary." Those of the railroad affiliates which did report their 1935 orders are included in the accompanying table under the railroad to which they were assigned in the Eastman report, although intermediate holding companies which the latter also listed have been omitted here.

Orders for Highway Vehicles

Purchaser	No.	Type of Vehicle	Seating capacity or truck capacity in tons	Where to be used	Manufacturer
Atchison, Topeka & Santa Fe					
Santa Fe Transportation Company	1	Bus-Truck	16	Rev.	White
	1	Bus	5	Rev.	Ford
	1	Trailer	.....	Rev.	Trailer Co. of America
Southern Kansas Stage Lines Company	8	Bus	25	Rev.	Pickwick
	6	Bus	30	Rev.	General Motors
	3	Bus	33	Rev.	General Motors

Continued on second left-hand page

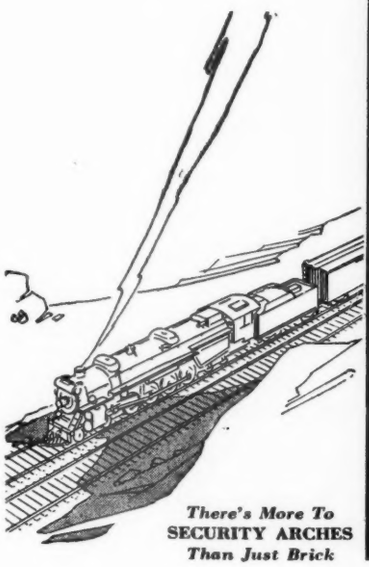
ONLY A COMPLETE ARCH

Gives Maximum Economy

The Security Arch is carefully proportioned to meet the requirements of the firebox design.

Properly installed the Security Sectional Arch insures maximum boiler capacity and minimum fuel consumption.

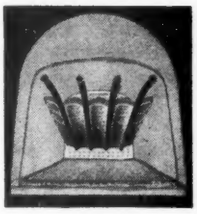
To maintain this fuel economy be sure a complete Security Arch is in place at all times.



There's More To
SECURITY ARCHES
Than Just Brick

HARBISON-WALKER REFRACTORIES CO.

Refractory Specialists

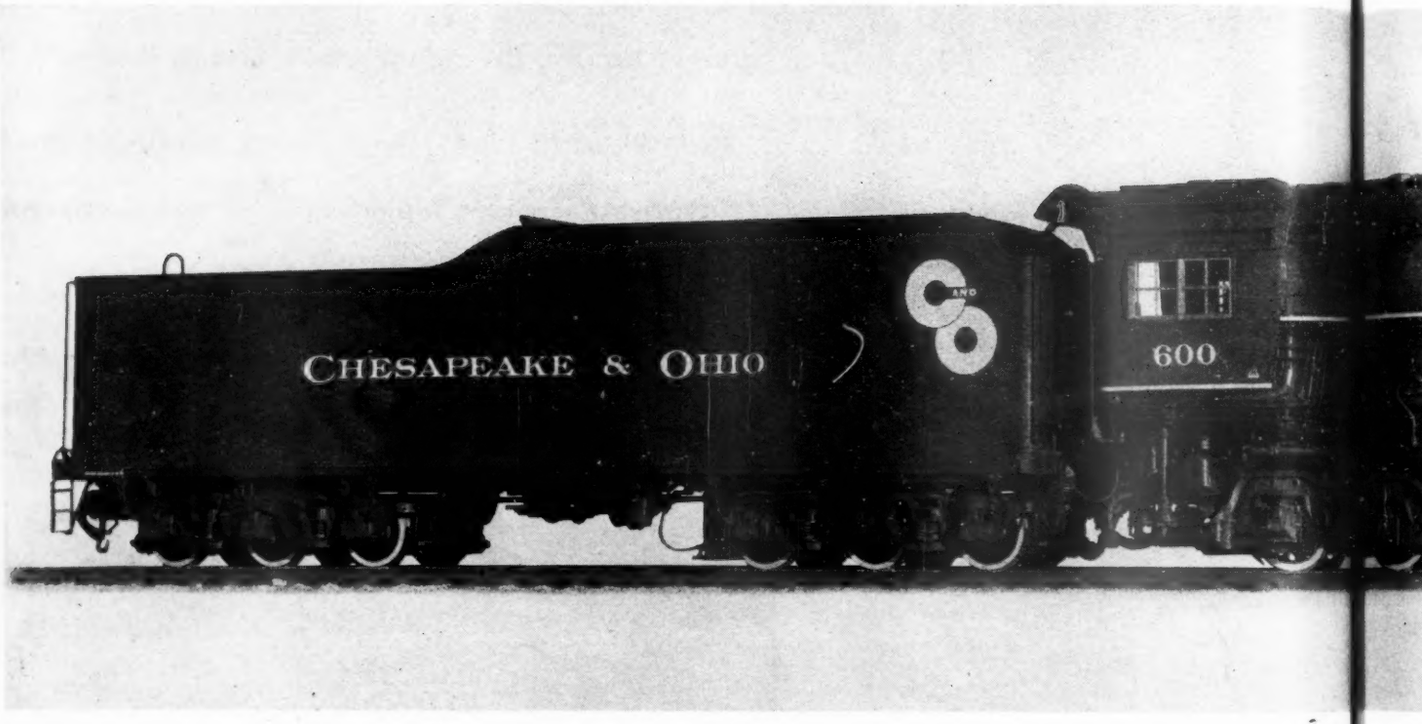


AMERICAN ARCH CO.
INCORPORATED

Locomotive Combustion Specialists » » »

THE FIRST OF THE NEW 4-8-4-

FOR THE

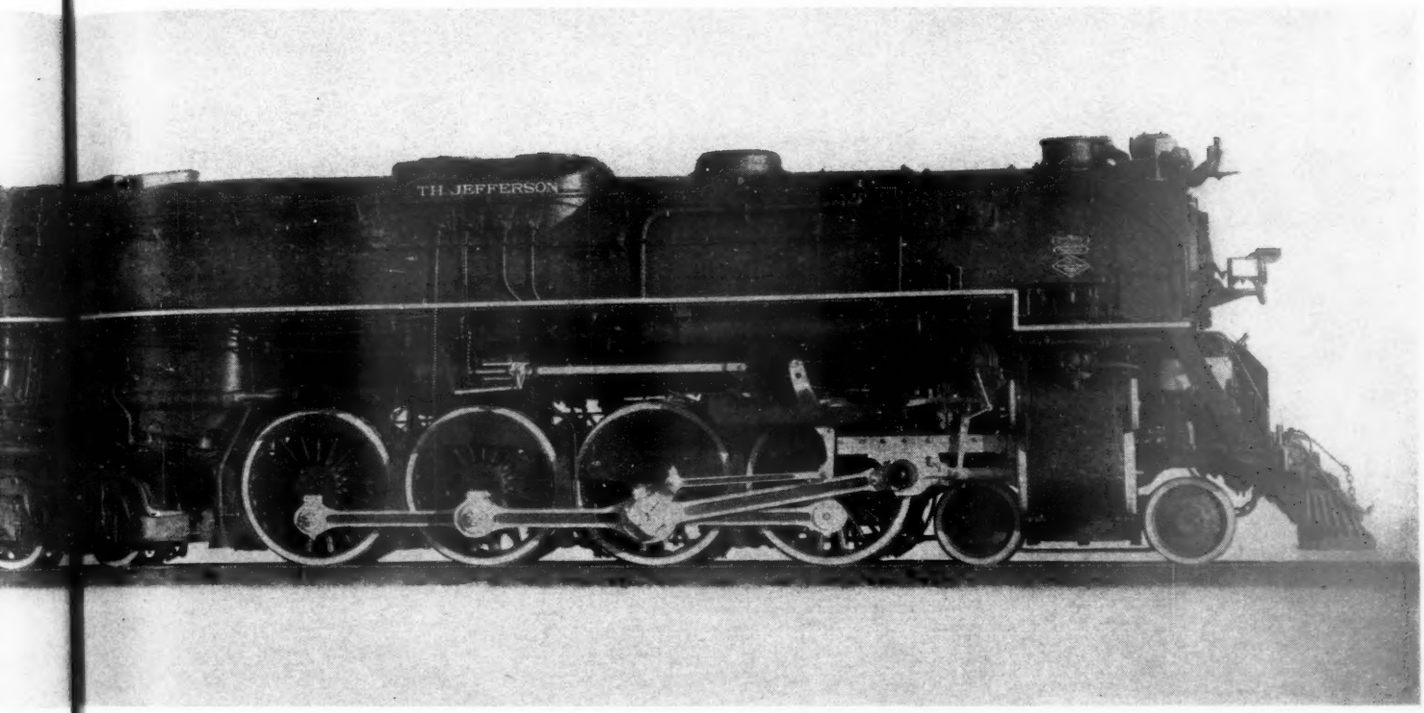


WEIGHT IN WORKING ORDER, POUNDS				
On Drivers	Eng. Truck	Trailer Truck	Total Engine	Tender Loaded
273,000	89,500	Front 53,000 Rear 61,500	477,000	381,700
WHEEL BASE			TRACTIVE EFFORT	
Driving	Engine	Eng. & Tender	Main Cylinder	With Booster
19' 3"	46'-10½"	98'-5¾"	66,960	81,035
BOILER		CYLINDERS		
Diam.	Press.	Diam.	Stroke	Driving Wheel Diam.
91-11/16"	250 lb.	27½"	30"	72"

LIMA
LOCOMOTIVE WORKS
INCORPORATED

LIMA

GREENBRIER TYPE LOCOMOTIVES
CHESAPEAKE & OHIO



C AND O

#600 Thomas Jefferson — #601 Patrick Henry — #602 Benjamin Harrison — #603 James Madison — #604 Edward Randolph

Five 4-8-4 Type Locomotives, designated by the railroad as The Greenbrier Type, were recently delivered by Lima Locomotive Works, Incorporated, to The Chesapeake & Ohio Railway Company.

These locomotives are specially designed to develop unusually high sustained horsepower for heavy, high speed passenger train service.

LOCOMOTIVE WORKS, INCORPORATED
LIMA OHIO

Orders for Highway Vehicles

(*Continued from page 92*)

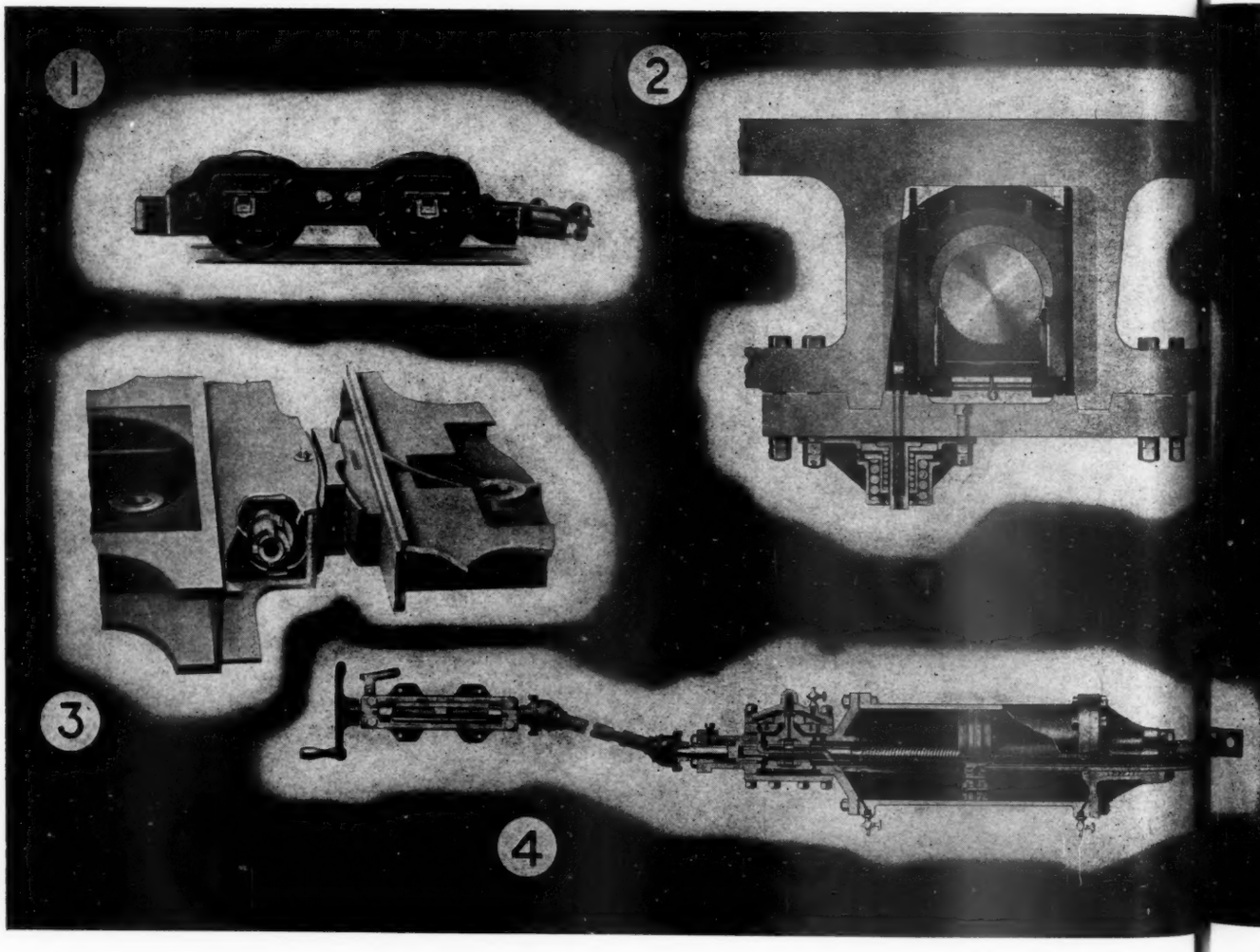
Purchaser	No.	Type of Vehicle	Seating capacity or truck capacity in tons	Where to be used	Manufacturer
Southern Kansas Stage Lines Company (*continued*)	3	Bus	29	Rev.	General Motors
	3	Bus	16	Rev.	Int. Harvester
	2	Bus	16	Rev.	Chevrolet
	8	Truck	1½ ton	Rev.	Chevrolet
	4	Truck	1½ ton	Rev.	Ford
	10	Tractor	2 ton	Rev.	Dart
	3	Tractor	2 ton	Rev.	General Motors
	7	Trailer	4 ton	Rev.	Spencer Trailer Co.
Baltimore & Ohio					
West Virginia Transportation Company	3	Bus	21	Rev.	General Motors
	1	Bus	21	Rev.	Chrysler
Bessemer & Lake Erie	1	Automobile	5	Co. Business	Chrysler
Boston & Maine	1	Bus	8	Co. Business	Chevrolet
	1	Bus	6	Co. Business	Ford
	2	Truck	1½ ton	Co. Business	Ford
	1	Automobile	2	Co. Business	Ford
	1	Automobile	5	Co. Business	Ford
Boston & Maine Transportation Company	14	Bus	33	Rev.	General Motors
	2	Bus	31	Rev.	General Motors
	2	Automobile		Rev.	Buick
Central of Georgia					
Central of Georgia Motor Transport Company	1	Bus	35	Rev.	Mack
Chesapeake & Ohio	1	Truck	.....	Co. Business	Ford
	1	Truck	1½ ton	Co. Business	Ford
	1	Truck	½ ton	Co. Business	Chevrolet
	1	Truck	2½-3 ton	Co. Business	General Motors
	2	Automobile	5	Co. Business	Ford
	1	Automobile	5	Co. Business	Chevrolet
	1	Automobile	5	Co. Business	Plymouth
Chicago, Burlington & Quincy	1	Bus	10	Rev.	Mack
	5	Truck	1½ ton	Co. Business	Ford
	1	Truck	5 ton	Co. Business	Int. Harvester
	1	Tractor	1½ ton	Rev.	Ford
	1	Tractor	1½ ton	Rev.	Int. Harvester
	4	Trailer	5 ton	Rev.	La Peer
	4	Automobile	5	Co. Business	Ford
	1	Automobile	5	Co. Business	Chevrolet
Burlington Transportation Company	14	Bus	33	Rev.	General Motors
	4	Bus	11	Rev.	General Motors
	2	Bus	20	Rev.	General Motors
Merchants Cartage Company	6	Truck	1½ ton	Rev.	Int. Harvester
	4	Tractor	3½ ton	Rev.	White
	4	Trailer	3½ ton	Rev.	Fruehauf
Chicago, Indianapolis & Louisville	2	Automobile	5	Co. Business	Chevrolet
Chicago, St. Paul, Minneapolis & Omaha					
Wilson Transportation Company	1	Truck	2 ton	Rev.	General Motors
	14	Tractor	.....	Rev.	General Motors
	14	Trailer	5 ton	Rev.	General Motors
Chicago, South Shore & South Bend	1	Truck	2-3 ton	Co. Business	Studebaker
	1	Automobile	2	Co. Business	Ford
	1	Automobile	2	Co. Business	Studebaker
Delaware & Hudson	1	Truck	1½ ton	Co. Business	Chrysler
Delaware, Lackawanna & Western	2	Truck	1½ ton	Co. Business	Ford
Denver & Rio Grande Western					
Denver, Colorado Springs & Pueblo Motorway and Rio Grande Motorway	5	Bus	29	Rev.	.....
	1	Bus	33	Rev.	.....
	2	Bus	25	Rev.	.....
	1	Bus	17	Rev.	.....
	2	Bus	21	Rev.	.....
	1	Truck	3 ton	Rev.	.....
	2	Tractor	.....	Rev.	.....
	2	Trailer	3 ton	Rev.	.....
Detroit & Mackinac	1	Automobile	.....	Co. Business	Ford
Detroit, Toledo & Ironton	15	Automobile	5	Co. Business	Ford
East Broad Top	1	Bus	20	Rev.	Reo
Erie	3	Truck	1½ ton	Co. Business	Chevrolet
	1	Truck	2 ton	Co. Business	Int. Harvester
	16	Automobile	5	Co. Business	Chevrolet
	5	Automobile	5	Co. Business	Chrysler
	3	Automobile	5	Co. Business	Ford
	2	Automobile	2	Co. Business	Chevrolet
	2	Automobile	5	Co. Business	Oldsmobile
	1	Automobile	5	Co. Business	Nash
	1	Automobile	2	Co. Business	Ford
Florida East Coast	1	Bus	.....	Co. Business	General Motors
Great Northern	3	Truck	15 ton	Rev.	General Motors
	3	Truck	5 ton	Rev.	General Motors
	1	Truck	3 ton	Rev.	General Motors
	1	Truck	3½ ton	Rev.	General Motors
	1	Truck	1½ ton	Rev.	General Motors
	1	Truck	1½ ton	Rev.	Ford
	1	Truck	½ ton	Co. Business	Int. Harvester
	1	Truck	1½ ton	Rev.	Int. Harvester
	1	Truck	1½ ton	Rev. and Co. Business	Ford
	4	Tractor	10 ton	Rev.	General Motors
	4	Trailer	.....	Rev.	General Motors
Kansas City Southern	2	Truck	1½ ton	Rev. and Co. Business	Chevrolet
Lehigh & New England	1	Truck	1½ ton	Co. Business	Chevrolet
	1	Automobile	5	Co. Business	Chrysler
Lehigh Valley	1	Truck	1½ ton	Co. Business	Diamond T
	1	Automobile	5	Co. Business	Hudson
	1	Automobile	5	Co. Business	Chevrolet
Long Island	1	Truck	1½ ton	Co. Business	.....
Maine Central	1	Truck	1½ ton	Co. Business	Ford
Maine Central Transportation Company	6	Bus	33	Rev.	General Motors
	2	Bus	35	Rev.	General Motors
	1	Bus	21	Rev.	General Motors
Missouri Pacific					
Missouri Pacific Transportation Company	4	Bus	29	Rev.	.....
	2	Automobile	7	Rev.	.....
New York Central	1	Bus	.....	Co. Business	.....
	1	Truck	½ ton	Co. Business	.....
	3	Truck	2 ton	Co. Business	.....
	1	Truck	¾ ton	Co. Business	.....
	1	Truck	1½ ton	Co. Business	.....
	2	Truck	3 ton	Co. Business	.....
New York, Chicago & St. Louis	2	Automobile	5	Co. Business	Chrysler

Orders for Highway Vehicles—Continued

Purchaser	No.	Type of Vehicle	Seating capacity or truck capacity in tons	Where to be used	Manufacturer
New York, New Haven & Hartford	1	Bus	8	Co. Business	Ford
	1	Automobile	5	Co. Business	Hudson
New England Transportation	7	Bus	21	Rev.	General Motors
	3	Bus	40	Rev.	A.C.F. Motors
	10	Truck	3 ton	Rev.	General Motors
	3	Trailer	5 ton	Rev.	Martin Trailer Co.
	6	Automobile	7	Rev.	Buick
	6	Automobile	7	Rev.	Packard
	2	Automobile	.....	Rev.	Chevrolet
	1	Automobile	.....	Co. Business	Chevrolet
Berkshire Motor Coach Lines, Inc.	4	Bus	33	Rev.	General Motors
Victoria Coach Line, Inc.	4	Bus	33	Rev.	General Motors
Connecticut Company	13	Bus	30	Rev.	A.C.F. Motors
	2	Bus	30	Rev.	General Motors
	1	Bus	30	Rev.	Twin Coach
	1	Bus	33	Rev.	White
	1	Bus	30	Rev.	Mack
	1	Bus	16	Rev.	Ford
	1	Bus	5	Co. Business	Ford
	2	Truck	¾ ton	Co. Business	Ford
	2	Truck	1½ ton	Co. Business	Ford
Norfolk & Western	1	Truck	1½ ton	Co. Business	Dodge
	1	Truck	1½ ton	Co. Business	Ford
	2	Truck	1½ ton	Co. Business	Chevrolet
Norfolk Southern					
Norfolk Southern Bus Corporation	1	Bus	44	Rev.	A.C.F. Motors
	1	Bus	44	Rev.	White
	1	Truck	1½ ton	Rev.	Ford
Northern Pacific					
Northern Pacific Transport Company	2	Bus	17	Rev.	Mack
	1	Bus	21	Rev.	Mack
	1	Bus	29	Rev.	General Motors
	1	Bus-Truck	9-4 ton	Rev.	General Motors
	2	Bus-Truck	5-2 ton	Rev.	Int. Harvester
	1	Bus-Truck	5-4 ton	Rev.	Int. Harvester
	1	Truck	1½ ton	Rev.	General Motors
	1	Truck	1½ ton	Rev.	Chevrolet
	1	Truck	1½ ton	Rev.	Ford
	1	Tractor	5½ ton	Rev.	General Motors
	1	Tractor	1½ ton	Rev.	General Motors
	1	Trailer	3 ton	Rev.	Company Shops
	1	Trailer	5 ton	Rev.	General Motors
	1	Automobile	5	Co. Business	Ford
Yellowstone Park Transportation Company	1	Bus	14	Rev.	Ford
Northwestern Pacific	1	Truck	1½ ton	Co. Business	.....
Pennsylvania	1	Truck	1½ ton	Co. Business	.....
	2	Automobile	5	Co. Business	.....
Pennsylvania Greyhound Lines	60	Bus	33	Rev.	General Motors
	1	Bus	36	Rev.	General Motors
	8	Automobile	.....	Co. Business	Ford
Pennsylvania Transfer Company	10	Truck	1½ ton	Rev.	.....
	16	Truck	2½ ton	Rev.	.....
Union Station Transfer Company	2	Truck	1½ ton	Rev.	Reo
	1	Truck	1½ ton	Rev.	General Motors
	1	Truck	¾ ton	Rev.	Dodge
Merchants Trucking Company	1	Truck	1½ ton	Rev.	Ford
Pere Marquette	1	Truck	.....	Co. Business	Ford
Pittsburg, Shawmut & Northern	1	Truck	½ ton	Co. Business	Chevrolet
Railway Express Agency	375	Truck	.....	.....	.....
	30	Tractor	.....	.....	.....
	68	Trailer	.....	.....	.....
Reading					
Reading Transportation Company	5	Truck	7 ton	Rev.	Mack
	4	Truck	12 ton	Rev.	Mack
	2	Truck	5 ton	Rev.	White
	2	Truck	5 ton	Rev.	General Motors
	1	Truck	7 ton	Rev.	Int. Harvester
	4	Tractor	10 ton	Rev.	Mack
	2	Tractor	7 ton	Rev.	General Motors
	12	Trailer	10 ton	Rev.	Fitz Gibbon & Crisp
St. Louis Southwestern	3	Tractor	3-4 ton	Rev.	Int. Harvester
	7	Tractor	3-4 ton	Rev.	White
	3	Trailer	5 ton	Rev.	Fruehauf
	1	Automobile	5	Co. Business	Chevrolet
Southern Pacific	6	Truck	1½ ton	Co. Business	.....
	2	Truck	.....	Co. Business	.....
	5	Automobile	5	Co. Business	.....
	1	Automobile	.....	Co. Business	.....
Pacific Greyhound Lines	48	Bus	33	Rev.	General Motors
	6	Bus	21	Rev.	General Motors
	3	Bus	16	Rev.	Dodge
	1	Bus	14	Rev.	Packard
	1	Bus	11	Rev.	Lincoln
	1	Automobile	7	Rev.	Cadillac
	1	Automobile	5	Co. Business	Chevrolet
	2	Automobile	5	Co. Business	Ford
Pacific Motor Trucking Company	12	Truck	1½ ton	Rev.	.....
	3	Truck	2½ ton	Rev.	.....
	4	Truck	5 ton	Rev.	.....
	1	Tractor	2½ ton	Rev.	.....
	2	Tractor	3 ton	Rev.	.....
	12	Tractor	3½ ton	Rev.	.....
	16	Trailer	.....	Rev.	.....
	2	Trailer	5 ton	Rev.	.....
	8	Trailer	7½ ton	Rev.	.....
	20	Trailer	10 ton	Rev.	.....
Texas & New Orleans	1	Truck	2½ ton	Co. Business	Int. Harvester
	1	Automobile	5	Co. Business	Chevrolet
Texas & Pacific					
Texas & Pacific Motor Transport Company	1	Bus	30	Rev.	White
	1	Bus	20	Rev.	White
	1	Truck	2 ton	Rev.	Reo
	1	Truck	1½ ton	Rev.	Chevrolet
	4	Tractor	1½ ton	Rev.	Ford
	3	Trailer	3 ton	Rev.	Fruehauf
	1	Trailer	3 ton	Rev.	Nabors
Union Pacific					
Interstate Transit Lines	10	Bus	33	Rev.	White
Utah Parks Company	1	Automobile	7	Rev.	General Motors

News Department begins on second left-hand page

WHETHER PASSENGER



REG. U.S. PAT. OFF.

FRANKLIN

OR FREIGHT SERVICE

THE PUBLIC DEMANDS HIGH SPEED

Franklin devices are designed to permit higher speeds and greater economy of locomotive maintenance.

1 The Locomotive Booster by providing added power for starting, accelerating and over the "tight places" gets the train more quickly to road speeds and reduces the time between terminals. It avoids the need of large main cylinders for power in starting and avoids the high maintenance due to excessive stress on machinery and frames.

2 The Franklin Automatic Compensator and Snubber maintains perfect driving box adjustment by automatically compensating for wear between the driving box face and pedestal or jaw members and for expansion and contraction of the box. It is applicable to either roller or plain bearing boxes. It increases the life of every bearing on the locomotive and materially reduces maintenance costs. It is to the locomotive what the shock absorber is to your automobile.

3 Franklin Radial Buffer Type E-2 provides free flexibility between engine and tender yet maintains normal contact between the buffer surfaces with high frictional resistance to compression. It avoids any development of lost motion and subsequent destructive shocks to the drawbar and drawbar connections. It effectively dampens oscillation between engine and tender, improves the riding qualities and increases safety of high speed operation. It eliminates destructive driving box pound that hammers bearings out of round.

4 Franklin Power Reverse Gear facilitates accurate and instantaneous cut-off adjustment for any speed. This makes for economical use of steam and increased safety of operation. It cushions the shocks at high speeds thus avoiding excess stresses that cause high maintenance costs. Franklin gears hold, and have little or no maintenance cost.

RAILWAY SUPPLY COMPANY, INC.

NEW YORK • CHICAGO • MONTREAL

NEWS

I. C. C. Warns Motor Carriers to File Applications

Because motor carriers have been so slow in filing their applications to the Interstate Commerce Commission for certificates and permits under the motor carrier act the commission has issued a notice to all motor carriers engaged in transportation for hire in interstate or foreign commerce urging them to give the matter immediate attention and to file their applications promptly in order that their rights may not be forfeited. It also says that prompt filing will materially assist the commission in handling the work.

The act provides that common carriers by motor vehicle subject thereto who were in bona fide operation on June 1, and contract carriers who were in bona fide operation on July 1, and who have so operated since whichever of those dates is applicable, shall be issued a certificate or permit without further proceedings, provided that application for such certificate or permit is made to the commission within 120 days after October 15, 1935, or in other words, on or before February 12, 1936. Forms to be used in making such applications and copies of the motor carrier act were given wide distribution in October, but to date only a comparatively small number of such applications have actually been filed with the commission.

The commission desires to call to the attention of all motor carriers who are entitled to the benefit of these provisions of the act that unless their applications for certificates or permits are filed on or before February 12, 1936, they will lose valuable rights, and that if they continue so to operate without filing such applications they will be subject to fines not exceeding $100 for the first offense and not exceeding $500 for any subsequent offense. Each day of such violation will constitute a separate offense.

If motor carriers entitled to take advantage of the above mentioned provisions do not file their applications on or before February 12, 1936, they will lose their right to the issuance of a certificate or permit unless they prove a case of public convenience and necessity or consistency with the public interest in the same manner as though they had never been in operation.

This warning is directed also to those motor carriers who instituted or extended their operations after June 1, if a common carrier, or July 1, if a contract carrier, and who were engaged in carrying on such operation or extension on October 15. Any such newly instituted or extended operation will be unlawful after February 12, 1936, unless application for a certificate or permit to cover has been filed with this Commission on or before that date.

The attention of these motor carriers is directed to the further fact that a motor carrier may be engaged in interstate or foreign commerce even though its physical operations do not cross state lines. Each motor carrier should carefully consider the nature and extent of of its transportation business to determine whether it is actually engaged in such commerce and subject to the act. In case of doubt it should file the appropriate application and thus safeguard its rights under the act.

Attention is also directed to the fact that the law does not empower the commission to extend beyond February 12, 1936, the date for filing the applications.

Atlantic States Shippers' Board

The Atlantic States Shippers' Advisory Board will hold its next regular meeting at the Bellevue-Stratford Hotel, Philadelphia, Pa., on Thursday, January 9. Besides the reports of the 39 commodity and standing committees, there will be a report of the freight loss and damage prevention committee and brief addresses on the pier boycott situation in New York harbor, and the motor carrier act; the New York situation by J. K. Hiltner and the motor carrier act by J. G. Scott of the Interstate Commerce Commission.

Tariff Sections of Motor Carrier Act Further Postponed

In response to numerous requests, the Interstate Commerce Commission, on January 2, issued an order further extending the effective date of sections of the Motor Carrier Act dealing with the filing and observance of rate tariffs and requiring that tariffs be filed with the commission on or before March 2, effective on April 1. The commission expects to publish its rules and regulations governing the construction, filing and posting of tariffs within a few days.

Court Enjoins New Election in Labor Dispute

The supreme court of the District of Columbia has issued an injunction, on application of the Atlantic Coast Line Shopmen's Association, to prevent a new election, ordered by the National Mediation Board, for the purpose of designating representatives of the company's shop employees. The court held that there was no evidence that the company had used coercion or influence or had interfered with the voting at a previous election at which the Shopmen's Association had received the majority vote.

Earnings of Employed Railroad Workers Above Food Price Level

Earnings of the million employed railroad workers are at present, on the average, 93 per cent as large as they were during 1929, while retail food prices are at approximately 80 per cent of the 1929 level, according to a statement issued by L. H. Bean, economic adviser to the Agricultural Adjustment Administration. Consequently, he says, the average railroad worker with a job is able to buy with his earnings 16 per cent more food than in 1929, and the statement also points out that the employed worker on the railroads fared considerably better during the depression than did the average employed factory worker. Attention is called, however, to the fact that "a large amount of unemployment still exists among railroad workers; only 61 per cent as many persons are employed on the railroads as were employed in 1929. In October, 1935, 1,030,000 workers were employed on the Class I railroads compared with 1,690,000 during 1929."

"The levels of both earnings and employment have risen since the bottom of the depression, when average earnings of employed workers were only 80 per cent as large as in 1929 and only 56 per cent as many persons were employed on the railroads, as in 1929," Mr. Bean continues.

"At the bottom of the depression, food price levels had fallen to 58 per cent of the 1929 level, and railroad workers who had jobs were able at that time to buy about 38 per cent more food products than in 1929. The composite of living costs other than for food has remained practically unchanged during the past two and one-half years. At the bottom of the depression these costs average approximately 81 per cent of the 1929 level, indicating that for the non-food items the average employed railroad worker was able to maintain his predepression purchases. At the present time the average earnings per person employed on railroads will buy about 11 per cent more of goods and services other than food, than in 1929.

"Earnings per person employed on the railroads declined during the depression considerably less than retail food prices declined, and the rise in earnings per employed person, from the low point in 1933 to the present, has enabled the average employed railroad worker to buy somewhat more food than in the prosperity years 1928-1929, in spite of the fact that food prices have risen from the very low 1933 level.

"A previous study showed that the same situation existed with regard to employed

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THE SUPERHEATER COMPANY

NEW YORK ELESCO CHICAGO

ELESCO SUPERHEATER UNIT REMANUFACTURING SERVICE

WELL ORGANIZED · RELIABLE · ECONOMICAL

WE HAVE REMANUFACTURED
300,000 SUPERHEATER UNITS
FOR AMERICAN RAILROADS

NEW YORK
60 East 42nd St.

MONTREAL
The Superheater Co., Ltd.
Dominion Square Bldg.

CHICAGO
Peoples Gas Bldg.

REPRESENTATIVE OF AMERICAN THROTTLE COMPANY, INC.

workers in factories, although the employed worker on the railroads fared considerably better during the depression than did the average employed factory worker. "As in the case of the analysis of earnings of food prices of factory workers, the present study emphasizes the marked difference in the condition of the employed person and that of the unemployed. The need in the case of the unemployed factory workers is a greater volume of industrial production and a comparable absorption of unemployed in private industry. In the case of the unemployed railroad workers, there is the same need for increased industrial production and increased employment in manufacturing industries, for that is the main source of the freight traffic handled by the railroads. Further industrial progress depends not on readjustment in food prices which on the average are in balance with employed workers' earnings, but rather a substantial lift in industrial activity and employment."

Commissioner Mahaffie Chairman of I.C.C.

Pursuant to the policy of the Interstate Commerce Commission, Commissioner Charles D. Mahaffie has been elected chairman of the commission for the year beginning January 1, 1936.

Club Meetings

The Central Railway Club of Buffalo, (N. Y.) will hold its next meeting at the Statler Hotel on Thursday evening, January 9th at 7 o'clock. This will be the 47th annual dinner. The speaker will be R. V. Fletcher, vice-president of the Association of American Railroads.

St. Lawrence Treaty Not Expected to Come Up This Year

President Roosevelt said at his press conference on December 30 that he did not expect the treaty for the construction of the St. Lawrence seaway to come up before the Senate at this session of Congress.

G. W. W. Hanger, Member of National Mediation Board, Dies

G. W. W. Hanger, member of the National Board of Mediation, died at New York City on December 26. Mr. Hanger was a member of the United States Board of Mediation and Conciliation from 1913 to 1920, assistant director of labor United States Railroad Administration from 1918 to 1920, member of the Railroad Labor Board from 1920 to 1926, and later a member of the United States Board of Mediation.

Commissioner Meyer on I. C. C. 25 Years

Commissioner Balthasar Henry Meyer of the Interstate Commerce Commission this month will have served as a member of the Interstate Commerce Commission for 25 years. He was originally appointed in January, 1911, by President Taft.

A celebration of the anniversary was held by the commissioners and employees of the commission on December 31 when felicitations were extended to Commissioner Meyer and he was presented with a scroll signed by the commissioners and employees who had worked with him during the period.

Freight Car Loading

Revenue freight car loading in the week ended December 21 totaled 599,534 cars, a decrease of 15,703 cars as compared with the previous week but an increase of 51,056 cars, or 9.3 per cent, as compared with the corresponding week of last year. All commodity classifications except coal and livestock showed increases as compared with last year, the principal increase being in miscellaneous freight, and forest products showed a small increase over the preceding week. The summary, as compiled by the Car Service Division of the Association of American Railroads, follows:

Revenue Freight Car Loading
For Week Ended Saturday, December 21

Districts	1935	1934	1933
Eastern	135,065	126,109	125,309
Allegheny	114,405	106,998	106,110
Pocahontas	43,672	41,662	36,982
Southern	91,830	82,772	76,500
Northwestern	70,200	63,579	59,566
Central Western	89,763	81,316	83,114
Southwestern	54,599	46,042	43,883
Total Western Districts	214,562	190,937	186,563
Total All Roads	599,534	548,478	531,464
Commodities			
Grain and Grain Products	29,101	24,855	24,512
Live Stock	12,080	15,569	14,948
Coal	134,458	139,618	123,510
Coke	7,905	6,082	6,773
Forest Products	29,589	20,009	18,143
Ore	5,774	3,282	3,740
Merchandise L.C.L.	151,492	151,073	155,622
Miscellaneous	229,135	187,990	184,216
December 21	599,534	548,478	531,464
December 14	615,237	580,202	559,419
December 7	637,133	551,485	541,992
November 30	570,427	488,185	499,596
November 23	646,503	561,942	585,738
Cumulative Total, 51 Weeks	31,051,693	30,420,556	28,765,287

The freight car surplus for the last half of November averaged 252,316 cars, an increase of 19,628 cars as compared with the first half of the month. The total included 143,013 box cars, 64,937 coal cars, 25,822 stock cars, and 8,524 refrigerator cars.

Car Loading in Canada

Car loadings in Canada for the week ended December 21 totaled 41,650 cars, as against 41,114 cars last year and 42,931 cars for the previous week, according to the compilation of the Dominion Bureau of Statistics.

	Total Cars Loaded	Total Cars Rec'd from Connections
Total for Canada:		
December 21, 1935	41,650	23,452
December 14, 1935	42,931	24,173
December 7, 1935	44,921	22,152
December 22, 1934	41,114	21,352
Cumulative Totals for Canada:		
December 21,1935	2,321,147	1,093,898
December 22, 1934	2,290,716	1,084,402
December 23, 1933	2,002,610	940,674

Railroad "Fans" to Make Trip Over Hell Gate Route

New York members of the Railroad Enthusiasts, Inc., will on the afternoon of January 11 be guests of the New Haven on a trip over the Hell Gate bridge route. Starting from Grand Central Terminal, New York, the special train will first visit the New Haven's electric locomotive repair shops and thence proceed over the Hell Gate bridge, traversing also sections of the Long Island in and about Brooklyn and Long Island City. It will then proceed through the East River tubes into Pennsylvania Station. R. H. Pusch, general passenger agent of the New Haven at Grand Central Terminal, is in charge of arrangements.

Frisco Budget

A budget proposed by the trustees of the St. Louis-San Francisco for 1936 provides for the expenditure of $1,697,127, divided as follows:

Rails and track fastenings	$750,387
Mechanical department	406,484
Bridges, culverts and trestles	298,048
Signals and interlockings	137,991
Widening cuts and fills	104,217

The rail program contemplates laying 100 miles of 112-lb. rails and replacing lighter rails, while the expenditure for signals and interlockings provides for the installation of automatic signals on 49 miles of line between New Albany, Miss., and Amory.

New York Central's Bus Affiliate Officially Launched

Bus services of the recently-formed Central Greyhound Lines, in which the New York Central has a substantial interest, were officially inaugurated in New York on December 27 with ceremonies in front of the New York Central building at Park avenue and Forty-sixth street. F. E. Williamson, president of the New York Central, gave the starting signal for the first new streamlined bus of a fleet of 276 which will provide highway passenger service in the territory of the New York Central between New York and Chicago and between Albany, N. Y., and Boston, Mass. Early next summer, the announcement states, the fleet is to be supplemented by 40 additional streamlined buses with the engines in the rear.

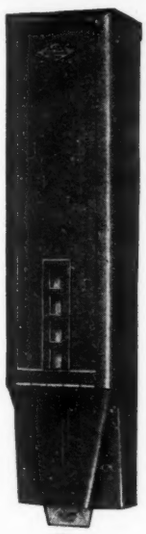
Railroads, Truckers, and Shippers Seek to Harmonize

In an effort to harmonize their points of view on matters of mutual interest, representatives of the National Industrial Traffic League, the American Trucking Associations, Inc., and the Association of American Railroads, met on December 30 at Washington in the first of a series of joint conferences. This was the first time that representatives of the land transportation agencies and their shipper customers ever came together to discuss their problems from a national standpoint around a conference table.

Preliminary organization of the conference was completed, following general discussion of some of the problems and the program to be pursued at future meetings. L. F. Orr, St. Louis, Mo., chairman of the highway transportation committee of the National Industrial Traffic League, was

Continued on next left-hand page

Suggested as the best railroad cup—



Data Books containing photos and blue prints will be sent to railroad officials upon request.

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elected temporary chairman, and John V. Lawrence, general manager of the American Trucking Associations, temporary secretary.

The Federal Coordinator of Transportation, Joseph B. Eastman, chairman of the Division of Motor Carriers, I. C. C., met with the conferees at their invitation and expressed approval of the effort being made by the three groups represented to dispose of controversial matters to the fullest extent possible through conference rather than by litigation. The initial meeting, the conference said, afforded an opportunity for a free and frank interchange of views on the problems of their respective groups. The second meeting will be held in Washington, January 6.

Increased Carloading Estimated

Freight car loadings in the first quarter of 1936 are expected to be about 6 per cent above actual loadings in the same quarter in 1935, according to estimates just compiled by the thirteen Shippers' Regional Advisory Boards. On the basis of these estimates, freight car loadings of the 29 principal commodities will be 4,677,608 cars in the first quarter of 1936, compared with 4,412,487 actual loadings for the same commodities in the corresponding period in 1935.

Twelve of the 13 Shippers' Regional Advisory Boards estimate an increase in the loadings for the first quarter of 1936 compared with the same period in 1935, the only one estimating a decrease being the New England board which would have reported an increase except for an anticipated reduction of 30 per cent in shipments of potatoes.

Of the 29 commodities included in the estimate, increases are expected in 25 while decreases are expected in four, hay, straw and alfalfa; citrus fruits; potatoes; and other fresh vegetables.

Board Considers Railway Labor Act a Model

The National Mediation Board, in its annual report to Congress, describes the railway labor act of 1926, as amended in 1934, as "the most advanced form of governmental regulation of labor relations that we have in this country." The report refers to the law as representing a comprehensive policy, developed by Congress step by step over a period of almost half a century, and "the culmination of 45 years of experience with legislation to govern the relations of employers and employees on the railroads and to promote peace and order in those relations as a means of preventing interruptions to interstate commerce." Since the law was enacted, the board said, there have been but two railroad strikes, and "that the railroad industry could maintain such a peaceful record is testimony to the soundness and effectiveness of the labor policies formulated by Congress in the railway labor act.

"These principles and methods, built up through years of experimentation, provide a model labor policy, based on equal rights and equitable relations, which with minor modifications may be made as useful to other industries as it has been to the railroads."

Meetings & Conventions

The following list gives names of secretaries, date of next or regular meetings and places of meetings:

AIR BRAKE ASSOCIATION.—T. L. Burton, Room 3400 Empire State Bldg., New York, N. Y.

ALLIED RAILWAY SUPPLY ASSOCIATION.—F. W. Venton, Crane Company, 836 S. Michigan Ave., Chicago, Ill. To meet with Air Brake Association, Car Department Officers' Association, International Railroad Master Blacksmith's Association, International Railway Fuel Association, International Railway General Foreman's Association, Master Boiler Makers' Association and the Traveling Engineers' Association.

AMERICAN ASSOCIATION OF FREIGHT TRAFFIC OFFICERS.—W. R. Curtis, F. T. R., M. & O. R. R., Chicago, Ill.

AMERICAN ASSOCIATION OF GENERAL BAGGAGE AGENTS.—E. L. Duncan, 816 McCormick Bldg., Chicago, Ill. Annual meeting, October 27-29, 1936, New Orleans, La.

AMERICAN ASSOCIATION OF PASSENGER TRAFFIC OFFICERS.—W. C. Hope, C. R. R. of N. J., 143 Liberty St., New York, N. Y.

AMERICAN ASSOCIATION OF RAILROAD SUPERINTENDENTS.—F. O. Whiteman, Union Station, St. Louis, Mo. Annual meeting, June 16-18, 1936, Hotel Stevens, Chicago, Ill.

AMERICAN ASSOCIATION OF RAILWAY ADVERTISING AGENTS.—E. A. Abbott, Poole Bros., Inc., 85 W. Harrison St., Chicago, Ill. Annual meeting, January 17-18, 1936.

AMERICAN ASSOCIATION OF SUPERINTENDENTS OF DINING CARS.—F. R. Borger, C. I. & L., Ry., 836 S. Federal St., Chicago, Ill.

AMERICAN RAILWAY BRIDGE AND BUILDING ASSOCIATION.—C. A. Lichty, 319 N. Waller Ave., Chicago, Ill. Annual Meeting, 1936, Chicago, Ill. Exhibit by Bridge and Building Supply Men's Association.

AMERICAN RAILWAY CAR INSTITUTE.—W. C. Tabbert, 19 Rector St., New York, N. Y.

AMERICAN RAILWAY DEVELOPMENT ASSOCIATION.—R. G. Buford, Asst. Mgr., Industrial Development Dept., M-K-T R. R., Dallas, Tex.

AMERICAN RAILWAY ENGINEERING ASSOCIATION.—Works in co-operation with the Association of American Railroads, Division IV.—E. H. Fritch, 59 E. Van Buren St., Chicago, Ill. Annual meeting, March 10-12, 1936, Palmer House, Chicago, Ill.

AMERICAN RAILWAY MAGAZINE EDITORS' ASSOCIATION.—M. Fenaja, Missouri Pacific Lines Magazine, Missouri Pacific Lines Bldg., St. Louis, Mo.

AMERICAN RAILWAY TOOL FOREMEN'S ASSOCIATION.—G. G. Macina, C. M. St. P. & P. R. R., 11402 Calumet Ave., Chicago, Ill.

AMERICAN SHORT LINE RAILROAD ASSOCIATION.—R. E. Schindler, Union Trust Bldg., Washington, D. C.

AMERICAN SOCIETY OF MECHANICAL ENGINEERS.—C. E. Davies, 29 W. 39th St., New York, N. Y.

Railroad Division.—Marion B. Richardson, 192 E. Cedar St., Livingston, N. J.

AMERICAN TRANSIT ASSOCIATION.—Guy C. Hecker, 292 Madison Ave., New York, N. Y.

AMERICAN WOOD PRESERVERS' ASSOCIATION.—H. L. Dawson, 1427 Eye St., N. W., Washington, D. C. Annual meeting, January 28-30, 1936, Hotel Peabody, Memphis, Tenn.

ASSOCIATION OF AMERICAN RAILROADS.—H. J. Forster, Transportation Bldg., Washington, D. C.

Operations and Maintenance Department.—J. M. Symes, Vice-President, Transportation Bldg., Washington, D. C.

Division I.—Operating.—J. C. Caviston, 30 Vesey St., New York, N. Y

Freight Station Section.—R. O. Wells, Freight Agent, Illinois Central Railroad, Chicago, Ill.

Medical and Surgical Section.—J. C. Caviston, 30 Vesey St., New York, N. Y.

Protective Section.—J. C. Caviston, 30 Vesey St., New York, N. Y.

Safety Section.—J. C. Caviston, 30 Vesey St., New York, N. Y.

Telegraph and Telephone Section.—W. A. Fairbanks, 30 Vesey St., New York, N. Y.

Division II.—Transportation.—G. W. Covert, 59 E. Van Buren St., Chicago, Ill.

Division IV. — Engineering. — E. H. Fritch, 59 E. Van Buren St., Chicago, Ill. Annual meeting, March 10-12, 1936, Palmer House, Chicago., Ill.

Construction and Maintenance Section.—E. H. Fritch, 59 E. Van Buren St., Chicago, Ill. Annual meeting, March 10-12, 1936, Palmer House, Chicago, Ill.

Electrical Section——E. H. Fritch, 59 E. Van Buren St., Chicago, Ill.

Signal Section.—R. H. C. Balliet, 30 Vesey St., New York, N. Y. Annual meeting, March 9-10, 1936, Hotel Stevens, Chicago, Ill.

Division V.—Mechanical.—V. R. Hawthorne, 59 E. Van Buren St., Chicago, Ill.

Division VI.—Purchases and stores.—W. J. Farrell, 30 Vesey St., New York, N. Y.

Division VII.—Freight Claims.—Lewis Pilcher, 59 E. Van Buren St., Chicago, Ill.

Division VIII. — Motor Transport. — George M. Campbell, Transportation Bldg., Washington, D. C.

Car-Service Division. — C. A. Buch, Transportation Bldg., Washington, D. C.

Traffic Department.—A. F. Cleveland, Vice-President, Transportation Bldg., Washington, D. C.

Finance, Accounting, Taxation and Valuation Department.—E. H. Bunnell, Vice-President, Transportation Bldg., Washington, D. C.

ASSOCIATION OF RAILWAY CLAIM AGENTS.—F. L. Johnson, Chief Clerk and Claim Agent, General Claims Dept., Alton R. R., 340 W. Harrison St., Chicago, Ill. Annual meeting, June 17-19, 1936, Hotel St. Paul, St. Paul, Minn.

ASSOCIATION OF RAILWAY ELECTRICAL ENGINEERS.—Jos. A. Andreucetti, C. & N. W. Ry., 1519 Daily News Bldg., 400 W. Madison St., Chicago, Ill.

BRIDGE AND BUILDING SUPPLY MEN'S ASSOCIATION.—W. S. Carlisle, National Lead Company, 900 W. 18th St., Chicago, Ill. Meets with American Railway Bridge and Building Association.

CANADIAN RAILWAY CLUB.—C. R. Crook, 2271 Wilson Ave., N. D. G., Montreal, Que. Regular meetings, second Monday of each month, except June, July and August, Windsor Hotel, Montreal, Que.

CAR DEPARTMENT OFFICERS' ASSOCIATION.—A. S. Sternberg, M. C. B. Belt Ry. of Chicago, 7926 S. Morgan St., Chicago, Ill.

CAR FOREMEN'S ASSOCIATION OF CHICAGO.—G. K. Oliver, 2514 W. 55th St., Chicago, Ill. Regular meetings, second Monday of each month, except June, July and August, La Salle Hotel, Chicago, Ill.

CAR FORMEN'S ASSOCIATION OF LOS ANGELES.—J. W. Krause, Room 299, 610 S. Main St., Los Angeles, Cal. Club not active at present.

CAR FOREMEN'S ASSOCIATION OF ST. LOUIS, MO.—E. G. Bishop, Illinois Central R. R., East St. Louis, Ill.

CENTRAL RAILWAY CLUB OF BUFFALO.—Mrs. M. D. Reed, 1817 Hotel Statler, McKinley Square, Buffalo, N. Y. Regular meetings, second Thursday of each month, except June, July and August, Hotel Statler, Buffalo. N. Y.

CINCINNATI RAILWAY CLUB.—D. R., Boyd, 2920 Utopia Place, Hyde Park, Cincinnati, Ohio. Operation suspended indefinitely.

CLEVELAND RAILWAY CLUB.—F. L. Frericks, 14416 Alder Ave., Cleveland, Ohio. Meetings temporarily suspended.

INTERNATIONAL RAILROAD MASTER BLACKSMITHS' ASSOCIATION.—W. J. Mayer, Michigan Central R. R., Detroit, Mich.

INTERNATIONAL RAILWAY FUEL ASSOCIATION.—T. D. Smith, 1660 Old Colony Bldg., Chicago, Ill.

INTERNATIONAL RAILWAY GENERAL FOREMEN'S ASSOCIATION.—Wm. Hall, 1061 W. Wabash St., Winona, Minn.

MASTER BOILER MAKERS' ASSOCIATION.—A. F. Stiglmeier, 29 Parkwood St., Albany, N. Y. Annual meeting, September 16-17, 1936, Hotel Sherman, Chicago, Ill.

NATIONAL ASSOCIATION OF RAILROADS AND UTILITIES COMMISSIONERS.—Clyde S. Bailey, 810 18th St., N. W., Washington, D. C. Annual meeting, November 10-13, 1936, Atlantic City, N. J.

NATIONAL RAILWAY APPLIANCES ASSOCIATION.—C. H. White, Room 1826, 208 S. La Salle St., Chicago, Ill. Exhibit at A. R. E. A. Convention, March 9-12, 1936, The Coliseum, Chicago, Ill.

NEW ENGLAND RAILROAD CLUB.—W. E. Cade, Jr., 683 Atlantic Ave., Boston, Mass. Regular meetings, second Tuesday of each month, except June, July, August and September. Copley-Plaza, Boston, Mass.

NEW YORK RAILROAD CLUB.—D. W. Pye, 30 Church St., New York, N. Y. Regular meetings, third Friday of each month, except June, July and August, 29 W. 39th St., New York, N. Y.

PACIFIC RAILWAY CLUB.—William S. Wollner, P. O. Box 3275, San Francisco, Cal. Regular meetings, second Thursday of each month, alternately at San Francisco and Oakland, excepting June at Los Angeles and October at Sacramento.

RAILWAY BUSINESS ASSOCIATION.—P. H. Middleton (Treas. and Asst. Sec.), First National Bank Bldg., Chicago, Ill.

RAILWAY CLUB OF PITTSBURGH.—J. D. Conway, 1941 Oliver Bldg., Pittsburgh, Pa. Regular meetings, fourth Thursday of each month, except June, July and August, Fort Pitt Hotel, Pittsburgh, Pa.

RAILWAY ELECTRICAL SUPPLY MANUFACTURERS' ASSOCIATION.—Edward Wray, 9 S. Clinton St., Chicago, Ill. Meets with Association of Railway Electrical Engineers.

RAILWAY FIRE PROTECTION ASSOCIATION.—P. A. Bissell, 40 Broad St., Boston, Mass.

Continued on next left-hand page

1936

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RAILWAY SUPPLY MANUFACTURERS' ASSOCIATION.—J. D. Conway, 1941 Oliver Bldg., Pittsburgh, Pa. Meets with Mechanical Division, Purchases and Stores Division, and Motor Transport Division, Association of American Railroads.

RAILWAY TELEGRAPH AND TELEPHONE APPLIANCE ASSOCIATION.—G. A. Nelson, Waterbury Battery Company, 30 Church St., New York, N. Y. Meets with Telegraph and Telephone Section of A. A. R., Division I.

RAILWAY TIE ASSOCIATION.—I. C. Rowe, 2091 Railway Exchange Bldg., St. Louis, Mo.

RAILWAY TREASURY OFFICERS' ASSOCIATION.—Merged with Association of American Railroads.

ROADMASTERS' AND MAINTENANCE OF WAY ASSOCIATION.—T. F. Donahoe, Gen. Supvr. Road. Baltimore & Ohio, Pittsburgh, Pa. Annual meeting, September 16-18, 1936, Chicago, Ill.

SIGNAL APPLIANCE ASSOCIATION.—G. A. Nelson Waterbury Battery Company, 30 Church St., New York, N. Y. Meets with A. A. R., Signal Section.

SOCIETY OF OFFICERS, UNITED ASSOCIATIONS OF RAILROAD VETERANS.—M. W. Jones, Baltimore & Ohio, Mt. Royal Station, Baltimore, Md. Annual meeting, October, 1936, Detroit, Mich.

SOUTHERN AND SOUTHWESTERN RAILWAY CLUB.—A. T. Miller, 4 Hunter St., S. E., Atlanta, Ga. Regular meetings, third Thursday in January, March, May, July, September and November, Ansley Hotel, Atlanta, Ga.

SOUTHERN ASSOCIATION OF CAR SERVICE OFFICERS.—R. G. Parks, A. B. & C. R. R., Atlanta, Ga.

TOOL FOREMEN SUPPLIERS' ASSOCIATION.—E. E. Caswell, Union Twist Drill Co., 11 S. Clinton St., Chicago, Ill. Meets with American Railway Tool Foremen's Association.

TORONTO RAILWAY CLUB.—R. H. Burgess, P. O. Box 8, Terminal "A," Toronto, Ont. Regular meetings, fourth Monday of each month, except June, July and August, Royal York Hotel, Toronto, Ont.

TRACK SUPPLY ASSOCIATION.—D. J. Higgins, Gardner-Denver Company, 332 S. Michigan Ave., Chicago, Ill. Meets with Roadmasters' and Maintenance of Way Association.

TRAVELING ENGINEERS' ASSOCIATION.—W. O. Thompson, 1177 E. 98th St., Cleveland, Ohio.

WESTERN RAILWAY CLUB.—C. L. Emerson, C. M. St. P. & P., Chicago, Ill. Regular meetings, third Monday of each month, except June, July, August and September, Hotel Sherman, Chicago, Ill.

Equipment and Supplies

FREIGHT CARS

THE BANGOR & AROOSTOOK is inquiring for 50 rack cars of 50 tons' capacity.

IRON AND STEEL

THE WABASH has divided an order for 10,000 tons of rails among the Bethlehem Steel Company, the Carnegie-Illinois Steel Corporation and the Inland Steel Company.

THE ATCHISON, TOPEKA & SANTA FE has ordered 9,000 tons of rails from the Carnegie-Illinois Steel Corporation, 47,157 tons from the Colorado Fuel & Iron Company, 2,416 tons from the Inland Steel Company and 17,807 tons of fastenings divided among these companies and the Republic Steel Corporation, the Sheffield Steel Corporation, the Jones & Laughlin Steel Corporation, the Columbia Steel Company and the Youngstown Sheet & Tube Company.

MISCELLANEOUS

CANADIAN PACIFIC.—An order has been given to Fafnir Bearings Incorporated, New Britain, Conn., for roller bearing journal boxes to equip eight of the new Canadian Pacific coaches. Fafnir Bearings Inc. have recently equipped two tenders with roller bearings for the New York Central on its Hudson type engine.

Construction

ATCHISON, TOPEKA & SANTA FE.—This company is now receiving bids on the reconstruction of two abutments and two piers in its bridge across the North Canadian river at Alston, Okla.

LOUISVILLE & NASHVILLE.—A contract has been awarded to W. W. Boxley & Company, Roanoke, Va., for the construction of four reinforced concrete piers for a bridge over Cove creek in Eastern Tennessee. This contract will involve the placing of about 3,500 cu. yd. of concrete. The contract for the fabrication and erection of the superstructure of this bridge, involving three 101 ft. 2 in. deck-girder spans, has been awarded to the Virginia Bridge & Iron Company, Roanoke. The work involved in these contracts will amount to a total of about $96,000.

PENNSYLVANIA.—The W. F. Trimble & Sons Company, Pittsburgh, Pa., has a contract to make alterations to the Pennsylvania stock yards at Herr's Island, Pittsburgh, at an estimated cost of $50,000.

ST. LOUIS-KANSAS CITY SHORT LINE.—Division 4 of the Interstate Commerce Commission has denied this company's application, filed in 1933, for a certificate authorizing the construction of an electric railroad between St. Louis and Kansas City, Mo., at an estimated cost of $35,000,000 which the company had hoped to borrow from the Reconstruction Finance Corporation. The report said it was "clear from the record that the territory is reasonably well served by existing railroads and other means of transportation; that the lines serving the territory have had heavy losses in recent years, have ample capacity to handle an increase in business, and could ill afford to lose the traffic which would be diverted by the proposed operation. The record fails to show that there is substantial need of another railroad in the territory and it has not been shown that the applicant has any funds available for the construction of the line."

STATEN ISLAND RAPID TRANSIT.—This Baltimore & Ohio subsidiary has given a contract to the Auserehl & Sons Contracting Corp., Jamaica, N. Y., for building construction, at Tompkinsville, Staten Island, N. Y., at an estimated cost of $30,000.

TERMINAL RAILROAD ASSOCIATION OF ST. LOUIS.—The St. Louis Board of Public Service has awarded to the Fruin-Colnon Contracting Company, St. Louis., Mo., the contract for constructing the South Valley Junction approach in East St. Louis., Ill., to the railroad deck of the St. Louis Municipal bridge across the Mississippi river between St. Louis and East St. Louis. This company's bid of $62,560 was the lowest submitted.

Supply Trade

The Parker Appliance Company has moved its entire plant to new and more commodious quarters at 17325 Euclid avenue, Cleveland, Ohio.

B. H. Whiting has been appointed district manager of the **Whiting Corporation,** with headquarters at Cincinnati, Ohio.

The Consulting Engineering Company, Carson street, Pittsburgh, Pa., has been appointed representatives in the Pittsburgh district of the **Pennsylvania Pump and Compressor Company,** Easton, Pa.

Ervin J. Sanne, representative of **Joseph T. Ryerson & Son, Inc.,** Chicago, has been appointed district sales manager of the **Inland Steel Company** with headquarters at St. Paul, Minn., to succeed **Benjamin C. Bradford,** retired.

B. C. Wilkerson has been appointed service engineer by the **Superheater Company** of New York and Chicago. He will service Elesco equipment on railroads in the New England territory, with headquarters at the New York office. For many years Mr. Wilkerson was a locomotive engineman on the New York, New Haven & Hartford. Leaving that road he became service engineer and then chief service engineer for the Franklin Railway Supply Company. Later he became associated with the Bradford Corporation, specializing in locomotive throttles. Previous to his association with the Superheater Company he was engaged by The American Throttle Company for special service work on Bradford and Wagner locomotive throttles, formerly manufactured by the Bradford Corporation.

Benjamin P. Talbot, contracting manager of the **American Bridge Company,** subsidiary of the **United States Steel Corporation,** at New York, has been appointed senior contracting manager, at New York, succeeding **Edward B. Stearns,** who is retiring after more than 47 years of continuous service. **William H. Kann** has been appointed contracting manager, Cincinnati district, with office at Cincinnati, Ohio, succeeding **H. M. Knapp,** who is retiring after more than 39 years of continuous service. **Carl H. Sander** has been appointed contracting manager, Central district, comprising north-western Ohio, and Detroit, Mich., areas, with office at Detroit, Mich., succeeding **J. C. Munn** of the Detroit area, who is retiring after more than 47 years of continuous service and **C. P. Mettler** of the Ohio area, who is retiring after more than 40 years of continuous service. **David E. Faust** has been appointed contracting manager at Duluth, Minn.

OBITUARY

John Obermier, vice-president of the Timken Roller Bearing Company, Canton, Ohio, died of pneumonia at Tucson, Ariz., on December 29.

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Financial

CHICAGO, MILWAUKEE, ST. PAUL & PACIFIC.—*Interest Payments.*—Trustees of the Chicago, Milwaukee, St. Paul & Pacific have applied to the federal district court for permission to pay, on January 1, two-thirds of the interest due last July 1 and October 1 on the general mortgage bonds. The total is $1,984,085. The court has set January 21 for a hearing. The road also desires to pay 20 per cent of the principal of various equipment trust certificates which matured this year.

CHICAGO, MILWAUKEE, ST. PAUL & PACIFIC.—*Appointment of Trustees Ratified.*—After a hearing on protests made by an independent committee representing certain bondholders, Division 4 of the Interstate Commerce Commission on December 28 ratified the appointment by the federal court at Chicago on October 17 of H. A. Scandrett, Walter J. Cummings, and George I. Haight as trustees, in a report which goes into considerable detail to show that there was no foundation for the charges made by the committee. On the contrary, the report says, the preponderance of the evidence shows President Scandrett "to be held in high regard as a railroad executive and supports the conclusion that his service as trustee would aid materially in reconstructing the earning power of the debtor."

"The appointment of the president of the debtor as a trustee was urged before Judge Wilkerson of the district court by a group of institutions having large investments in Milwaukee securities," the report says. "It is approved by the Reconstruction Finance Corporation, a creditor to the extent of $11,499,462 in loans to the debtor. In a memorandum accompanying his order the judge emphasized the value of Scandrett's training and experience in the group of the three trustees whom he desired to appoint. Strong commendation of Scandrett's qualifications and personal character was given at the hearing by the presidents of the Union Pacific and Northern Pacific systems.

"The committee's objection to the appointment of Scandrett as trustee goes not so much to his ability as a manager of railroad operation as to his alleged connection with its banking interests in New York City which acted as reorganization managers after the 1925 receivership; to his failure to institute suits for the recovery of funds improperly spent by the predecessor company; and to his participation in the bringing of a suit to enjoin the enforcement of a condition prescribed by the Commission in its certificate and order of January 4, 1928. 131 I. C. C. 673, *supra.* Scandrett testified at the court hearing and at the hearing before us regarding all the foregoing matters. Determination as to the propriety of his failure to institute suits in the matters referred to by the committee involves many considerations. We fail to find in the protestant's inferences that lawsuits should have been instituted, or in the record made at the hearing a sufficient basis for denying ratification of Scandrett's appointment.

"The condition in our certificate and order of January 4, 1928, which the carrier sought to enjoin related to the impounding of the so-called $4 fund contributed by the stockholders under the plan, and provided that such fund should not be paid out unless and until authorized by the court and by this Commission. As the matter was adjudicated by the courts, the $1.50 portion of the fund, being that portion which had been allocated to the compensation of reorganization managers, protective committees, etc., was held not to be the property of the railroad corporation, and, therefore, not subject to the jurisdiction of the Commission. *United States* v. *Chicago, M. St. P. & P. R. Co.*, 282 U. S. 311. Without attempting to excuse or condone a disregard of our intent in this matter, the fact remains that the courts upheld the legal right of the debtor to maintain the suit. Furthermore, without doubt, Scandrett acted in this connection by direction of the debtor's board of directors.

"While the record before us indicates that Scandrett was placed by certain banking interests in the office of president of the debtor, proof is wanting of his subsequent close affiliation with those interests or of their influence upon his conduct as president, except, of course, such interests as were represented on the debtor's board. Regardless of this circumstance, however, under Section 77 of the Bankruptcy Act, the plan of reorganization is subject to our approval, and the expenses of the debtor and the protective committees in connection with the proceeding and plan must be within a maximum found by us to be reasonable.

"The independent committee points to the short period which has elapsed since the debtor was last reorganized, as evidence of want of ability on the part of Scandrett to operate the property successfully. In view of the marked business depression which has existed during a large part of the period of his service as president, and the unprecedented drop of railroad traffic in this period, we are unable to find from the record before us proof of ineptitude on his part.

"After consideration of these matters we are of the opinion that on none of the grounds urged by the independent committee can Scandrett be considered as disqualified to act as a co-trustee of the debtor's property.

"It is clear that Scandrett, from his intimate knowledge of the property, is the logical choice as a trustee experienced in railroad management and operation. The judge suggested that it is immaterial whether Scandrett receives compensation as a trustee or as an employee of the trustee. In this and similar situations we interpret the provisions of section 77(c) to mean that the compensation from the estate of the debtor of any person serving as trustee is subject to the approval both of the court and the Commission, whether such compensation is termed that of a trustee or that of an officer of the debtor corporation. Assuming that Scandrett is to continue as president of the debtor's railroad, our ratification of his appointment will be qualified by the requirement that his only compensation from the debtor's estate during his service as trustee shall be that allowed by the judge within the maximum limits to be hereafter approved by us as reasonable."

DENVER & SALT LAKE.—*Bonds.*—The Interstate Commerce Commission has authorized this company to issue $2,500,000 of series A 4 per cent first mortgage bonds to redeem a like amount of 6 per cent bonds. Of the issue $1,000,000 is to be held in the company's treasury and the remainder sold at not less than par to the holders of the present 6 per cent bonds—the balance, if any, to be taken by Garrett-Bromfield & Co., of Denver.

FORT WORTH BELT.—*I.C.C. Inquiring Into Midamerica Corporation.*—A purpose to inquire into the affairs of the Midamerica Corporation, a company organized by the Van Sweringen interests which on September 30 acquired 2,054,492 shares of stock of the Alleghany Corporation, is indicated in an order issued by the Interstate Commerce Commission assigning the application of George A. Tomlinson for authority to serve as director of the Fort Worth Belt for hearing at Washington on February 3 before Assistant Director Boles of its Bureau of Finance. At the same time the commission reopened for further hearing proceedings in which Mr. Tomlinson, who is a director of the Midamerica, was authorized to hold the position of director of various companies affiliated with the Missouri Pacific system, the Denver & Rio Grande Western, and the Wheeling & Lake Erie. When Mr. Tomlinson's application disclosed that he was a director of the new company O. E. Sweet, director of the Bureau of Finance, wrote to William Wyer, secretary and treasurer of the Missouri Pacific, saying that "if it is a fact that Midamerica controls the Alleghany Corporation and thereby controls various railroads in different systems, it will be necessary for the commission to have full information with reference thereto before it can pass intelligently upon Mr. Tomlinson's application." The order for the hearing also refers to the Midamerica as "a company the general character of whose business is investments, the nature of which is not shown but is material to a determination of whether or not public or private interests will be adversely affected by the holding of the various positions covered by the aforesaid orders or by the holding of the position covered by said application." The commission is believed to be seeking information as to whether it has jurisdiction over the acquisition of the stock by the new company under the holding company amendments to the interstate commerce act of 1933.

ILLINOIS CENTRAL.—*Equipment Trust.*—The Interstate Commerce Commission has authorized this company to assume obligation for $15,000,000 of equipment trust certificates ($3,000,000 in addition to $12,000,000 previously authorized) to be delivered to the Public Works Adminstration in connection with loans advanced for repairs and improvements to equipment, the company waiving the redemption privilege on these certificates.

MISSOURI PACIFIC.—*Reorganization.*—A

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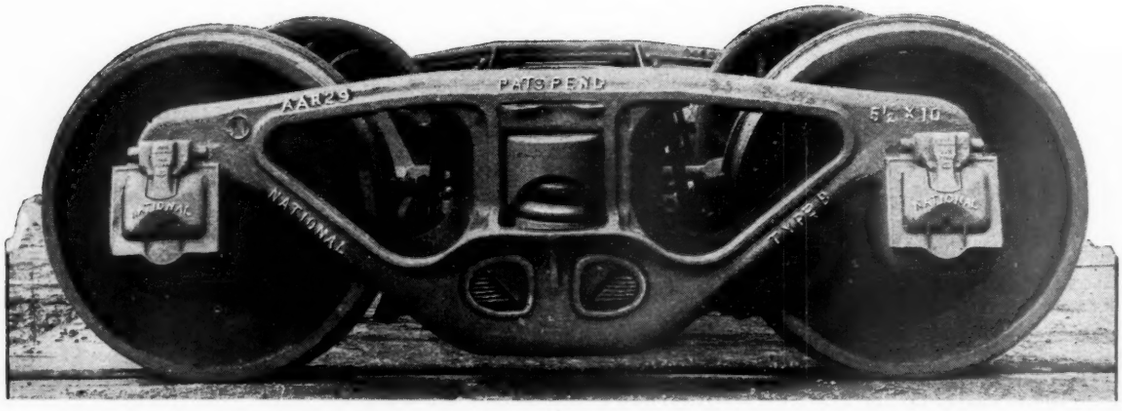
NATIONAL
TYPE B TRUCK



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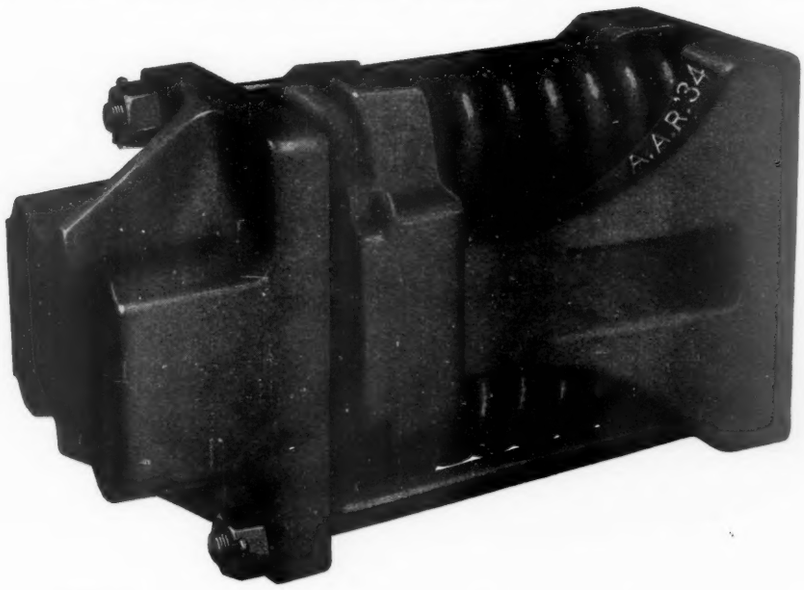
NATIONAL
M-17-A DRAFT GEAR



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suit for recision of contracts and recovery of more than $3,000,000 has been filed by Guy A. Thompson, trustee for the Missouri Pacific, against Terminal Shares, Inc., in the circuit court of Buchanan county at St. Joseph, Mo. The petition asks recision of four contracts of December 31, 1930, whereby the railroad properties in Kansas City, Mo., and St. Joseph were acquired by the Missouri Pacific from Terminal Shares. The court is asked to grant the trustee a lien with authority to sell these properties to recover $3,200,000 plus interest.

NEW YORK CENTRAL.—*Notes.*—Attaching a condition limiting the interest rate to 5 per cent whereas the company had proposed a maximum of 6 per cent, and to that extent supporting the campaign of the Reconstruction Finance Corporation to reduce interest rates paid by railroads, Division 4 of the Interstate Commerce Commission has authorized this company to issue and reissue from time to time $75,000,000 of short-term promissory notes and to pledge and repledge as collateral security therefor all or any part of $175,000,000 of refunding and improvement mortgage bonds, series C. As of September 31 the company had outstanding $65,767,248 of short-term notes in addition to $27,499,000 of three-year notes to the Reconstruction Finance Corporation. Pending consideration of the application Director O. E. Sweet of the commission's Bureau of Finance had suggested a rate of 4 per cent to which the company had vigorously objected on the ground that while interest rates are now low it would be unsafe to limit the rate to 4 per cent. The commission's order provides that the rate shall not exceed 5 per cent and that the notes be payable not later than December 31, 1937.

SOUTHERN.—*R.F.C. Loan.*—The Interstate Commerce Commission has authorized the extension of maturing loans of $14,493,540 by the Reconstruction Finance Corporation to this company—$2,000,000 to be extended to September 1, 1937, and $12,493,540 to September 1, 1938.

SYLVANIA. — *Control.* — The Interstate Commerce Commission has authorized the Sylvania Railway to acquire control by lease of the railroad of the Sylvania Central and to issue $1,200 of capital stock to be sold at par and the proceeds used for corporate purposes.

VIRGINIAN. — *Stock.* — The Interstate Commerce Commission has authorized this company to issue $27,955,000 of 6 per cent non-redeemable cumulative preferred stock, to be given in exchange for a similar amount of redeemable stock now outstanding.

Average Prices of Stocks and of Bonds

	Dec. 31	Last week	Last year
Average price of 20 representative railway stocks..	41.59	40.66	36.09
Average price of 20 representative railway bonds..	76.23	75.50	75.86

Dividends Declared

Cleveland, Cincinnati, Chicago & St. Louis.—$5.00; 5 Per Cent Preferred, $1.25, quarterly, both payable January 31 to holders of record January 21.

Reading Company.—50¢, quarterly, payable February 13 to holders of record January 16.

Railway Officers

EXECUTIVE

E. W. Scheer Elected President of Reading and C. N. J.

Edward W. Scheer, vice-president of the Reading and Central of New Jersey, was on December 27 elected president of those two roads to succeed the late Charles H. Ewing. A photograph of Mr. Scheer, together with a sketch of his railway career, will be published in next week's issue.

Baldwin Made Chief Executive Officer of M. P. Lines

L. W. Baldwin, co-trustee of the Missouri Pacific Lines since June 22, 1933, prior to which time he was president, has resigned as a trustee and was appointed chief executive officer on December 26 with full jurisdiction over all departments. Following Mr. Baldwin's resignation, the federal court appointed as sole trustee Guy A. Thompson, who has been serving as co-trustee with Mr. Baldwin.

C. T. Dike, vice-president and chief engineer of the Chicago & North Western, with headquarters at Chicago, has been appointed also to the same position on the Chicago, St. Paul, Minneapolis & Omaha, following the death on December 11 of **Harry E. Barlow,** chief engineer of the Omaha.

In accordance with the practice of rotating the presidency annually of the Burlington-Rock Island between officers of the Chicago, Rock Island & Pacific and the Burlington System, **John A. Hulen,** vice-president of the Ft. Worth & Denver City (part of the Burlington System), has been elected president of the Burlington-Rock Island for the ensuing year, succeeding **J. E. Gorman,** a trustee of the Rock Island.

Revelle W. Brown, vice-president and general manager of the Central of New Jersey, has been elected vice-president in charge of operation and maintenance of both the Central of New Jersey and the Reading, succeeding **Edward W. Scheer.** Mr. Brown was born on August 5, 1883, at Carlyle, Ill., and was educated in the public schools and Carlyle High School. He entered railway service as a laborer on the Illinois division of the Baltimore & Ohio in July, 1901, becoming a fireman in 1902, and an engineer in 1905. In May, 1910, he became air brake instructor at Cincinnati, Ohio, and three months later was appointed assistant road foreman of engines. In March, 1911, Mr. Brown again became an engineer and on January 14, 1912, assistant road foreman of engines. He became engineer on January 23, 1912; road foreman of engines at Indianapolis in October, 1912; supervisor locomotive operation in January, 1914; road foreman of engines of the Toledo division in January, 1915; trainmaster in June, 1915; assistant superintendent in October, 1917; superintendent of the Ohio division in September, 1919; superintendent of the Connellsville division in 1921; superintendent of the Cumberland division in June, 1923; and general superintendent of

Revelle W. Brown

the Maryland district in January, 1926. All of Mr. Brown's service up to this time was with the Baltimore & Ohio. In December, 1930, Mr. Brown was appointed general manager of the Central of New Jersey and in July, 1931, he became vice-president and general manager of that road.

FINANCIAL, LEGAL AND ACCOUNTING

J. W. Killey, chief land appraiser of the Chicago, Burlington & Quincy, has been appointed general land agent and **K. E. Morrison,** tax accountant, has been appointed general tax agent, both with headquarters at Chicago. The foregoing appointments were made following the retirement on January 1 of **Alfred E. Patten,** real estate and tax agent of the Burlington.

Frederick Bramley, whose appointment as secretary of the Canadian Pacific at Montreal, Que., effective January 1, was noted in the *Railway Age* of December 14, was born at Darlington, England, on

Frederick Bramley

February 16, 1886. Mr. Bramley was educated in England and studied general railway operating and economics, at Leeds and Durham universities. He entered

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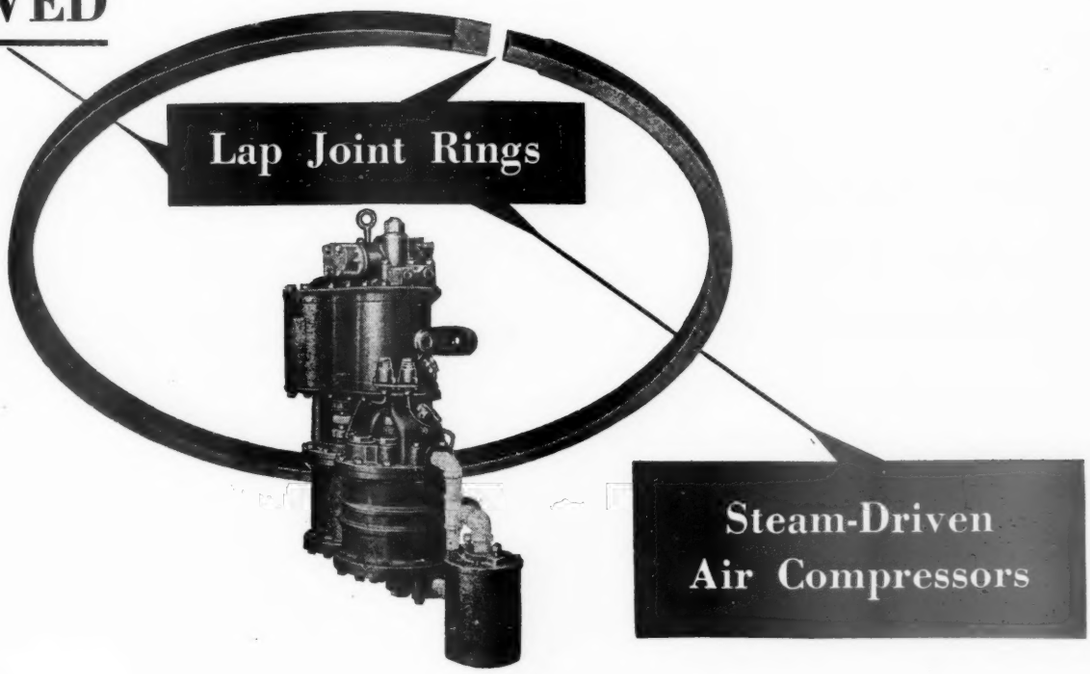


This type of joint, used successfully for many years on bronze packing rings for Triple Valves, is now available, in improved form, for steam-driven Air Compressor piston rings, with the following advantages:

Maintenance of Seal against the cylinder wall and in the groove during the entire life of the ring is assured by the LAP JOINT of distinctive design and sturdy construction. . . . . .

Uniform Wall Pressure results from specialized manufacturing processes that produce a single-cast ring of even grain texture, free from shrinkage flaws . . . . . .

True Circularity is assured by precision machining of every ring individually. . . . . .

More complete information concerning the character and advantages of the Lap Joint Rings is contained in Circular Notice 1109, a copy of which may be had upon request . . . . .

WESTINGHOUSE AIR BRAKE CO.

General Office and Works, Wilmerding, Penna.

(1296)

railway service in 1901 and served in the freight department of the North Eastern Railway, in northeastern England. In 1915 Mr. Bramley was transferred to the War Office, London. Mr. Bramley served as private secretary to the general manager of the Midland Railway and then served in the same capacity on the Great Central Railway. From 1916 to 1919 he was in Military service and in 1919 he entered the service of the Canadian Pacific as secretary to European general manager at London. From 1925 to 1930 Mr. Bramley served as special representative for the Canadian Pacific at London and from October to December, 1932, he served as acting agent of the C. P. R. at Southampton. Mr. Bramley served as general agent for Ireland for the Canadian Pacific and the Canadian Pacific Steamships, Ltd., at Belfast, from January, 1933, to December, 1935.

OPERATING

Thomas E. Emsley, assistant superintendent of the Canadian Pacific, with headquarters at Montreal, Que., has been appointed assistant superintendent of the Brownville division, with headquarters at West St. John, N. B., succeeding **D. H. Ryan,** retired.

F. C. Paulsen, assistant superintendent on the Central district of the Union Pacific, with headquarters at Pocatello, Idaho, has been appointed superintendent of this district, with the same headquarters, succeeding **E. C. Manson,** who has been appointed assistant to the general manager of the Central district, with headquarters at Pocatello.

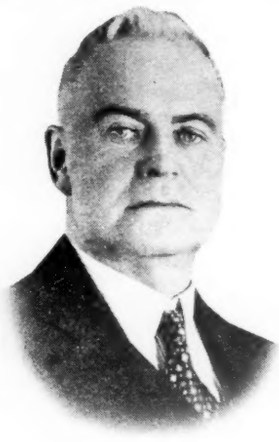
E. H. Piper, trainmaster of the McCook division of the Chicago, Burlington & Quincy, with headquarters at McCook, Neb., has been appointed acting assistant superintendent of the Sheridan division, with headquarters at Sheridan, Wyo., succeeding **D. J. Nelson,** who has been furloughed because of ill health. **C. W. Dentner** has been appointed acting trainmaster of the McCook division to replace Mr. Piper.

J. C. Roth, general superintendent of transportation of the Chicago, Burlington & Quincy, with headquarters at Chicago, on January 1 was appointed also to the same position on the Colorado & Southern, the Fort Worth & Denver City, and the Wichita Valley, all of which form parts of the Burlington System. **C. A. Worst,** superintendent of telegraph of the Burlington, with headquarters at Chicago, has been appointed also general superintendent of telegraph of the C. & S., the F. W. & D. C., and the W. V.

C. O. McHugh, superintendent of the Canadian Pacific at Farnham, Que., has been appointed superintendent of transportation, eastern lines, with headquarters at Montreal, Que., succeeding **George T. Coleman. W. E. McGill,** assistant superintendent at Sudbury, Ont., has been appointed superintendent at Farnham. **J. O. Fortier,** assistant superintendent, Montreal terminals, has been appointed assistant superintendent at Smith's Falls, Ont. **D. S. Thomson,** assistant superintendent at Smith's Falls, has been appointed assistant superintendent at Sudbury, succeeding Mr. McGill.

Arthur Hatton, general superintendent of transportation of the Canadian Pacific, with headquarters at Montreal, Que., has retired under the Company's pension regulations. Mr. Hatton entered the service of the Canadian Pacific as an operator at Eagle River, Ont., in June, 1891, and a year later was promoted to extra dispatcher at Rat Portage. In January, 1900, he went to Fort William, Ont., as dispatcher, becoming chief dispatcher there on June, 1901, and train dispatcher in August, 1901. Mr. Hatton served as chief dispatcher from 1901 to 1906 successively at Rat Portage, Fort William, Cranbrook, B. C., and Kenora, Ont. In January, 1907, he became inspector and train dispatcher at Winnipeg, Man., and in February, 1912, he became acting superintendent of car service at Winnipeg, being promoted to superintendent of car service in April of the same year. In January, 1915, Mr. Hatton became general superintendent of car service at Montreal and has served in that capacity ever since, his title having been changed, however, about 15 years ago to general superintendent of transportation.

George T. Coleman, superintendent of transportation of the Eastern lines of the Canadian Pacific at Montreal, Que., has been appointed general superintendent of transportation, with the same headquarters, succeeding **Arthur Hatton,** retired. Mr. Coleman entered the service of the Canadian Pacific in May, 1893, as agent and operator on the Lake Superior division and served as dispatcher, chief train dispatcher, assistant trainmaster, and trainmaster in Chapleau, Ont., Carleton Place, Sudbury, Revelstoke, B. C., White River, Ont.,



George T. Coleman

Medicine Hat, Alberta, Moose Jaw, Sask., Regina, and Winnipeg, Man. In January, 1915, Mr. Coleman was promoted to car service and fuel agent at Moose Jaw and in the following year he became car service agent at Toronto. In November, 1918, Mr. Coleman went to Montreal as inspector of transportation. He was made superintendent of transportation at Montreal in December, 1930, the position he held at the time of his recent appointment.

PURCHASES AND STORES

D. H. Phebus, chief clerk to the general storekeeper of the Chicago, Milwaukee, St. Paul & Pacific, at Milwaukee, Wis., has been promoted to district storekeeper of the Southern district, with headquarters at Savanna, Ill., succeeding **J. C. MacDonald,** who has been appointed to the newly-created position of district storekeeper of the Tacoma district, with jurisdiction over the territory between Tacoma and Harlowton, Mont. Mr. MacDonald's appointment was made following the death recently of **A. J. Kroha,** assistant general storekeeper, Lines West, whose position has been abolished. **J. C. Hart,** chief clerk to the district storekeeper at Minneapolis, Minn., has been appointed division storekeeper of the LaCrosse and River division, with headquarters at LaCrosse, Wis., succeeding **A. M. Lemay,** who has been appointed inspector of stores, with headquarters at Milwaukee, Wis. Mr. Lemay succeeds **H. R. Toohey,** who has been appointed chief clerk to the general storekeeper at Milwaukee, succeeding Mr. Phebus.

TRAFFIC

J. J. Bodenlos has been appointed assistant to general passenger traffic manager of the New York Central System, with headquarters at New York.

G. L. Leonard, district freight and passenger agent on the Union Pacific, with headquarters at Tacoma, Wash., has been appointed general agent at Portland, Ore., succeeding **A. Kelling,** deceased.

C. C. Weedin, chief clerk to the freight traffic manager of the Union Pacific, with headquarters at Omaha, Neb., on January 1 was appointed general freight and passenger agent, with headquarters at Kansas City, Mo., succeeding **Ambrose J. Seitz,** whose promotion to assistant traffic manager, with headquarters at Salt Lake City, was noted in the *Railway Age* of December 14.

William T. Price, assistant general freight and passenger agent on the Union Pacific at Denver, Colo., whose appointment as general freight and passenger agent, with the same headquarters, was noted in the *Railway Age* of December 14, was born on August 12, 1883, at Astoria, Ill. Mr. Price first entered the service of the Union Pacific on March 1, 1904, in the freight claim department at Omaha, serving successively as traveling adjuster, contracting freight agent at Denver, traveling freight agent at Denver, and commercial agent at Pueblo, Colo. During the war Mr. Price served as a captain in the United States Army at Washington, D. C., and at Ft. Sam Houston, then returning to the Union Pacific as general agent at Kansas City, Mo. On January 1, 1925, he was appointed assistant general freight agent at Denver, and on April 15, 1933, his title was changed to assistant general freight and passenger agent. He was holding the latter position at the time of his recent appointment as general freight and passenger agent, effective January 1.

William Horder, assistant general passenger agent on the Canadian Pacific, who has been appointed general passenger agent, with headquarters as before at

William Horder

Winnipeg, Man., as noted in the *Railway Age* of December 7, has been connected with this company continuously for 35 years. He was born on November 10, 1882, at Montreal, Que., and entered the service of the Candian Pacific as a clerk in the passenger department at Montreal in June, 1900. Subsequently he served successively as clerk, excursion clerk and chief clerk in this department, until August 1, 1922, when he was appointed assistant district passenger agent at Toronto, Ont. On August 1, 1926, Mr. Horder was promoted to assistant general passenger agent at Winnipeg, the position he was holding at the time of his recent appointment as general passenger agent.

Ambrose J. Seitz, general freight and passenger agent on the Union Pacific, with headquarters at Kansas City, Mo., whose appointment as assistant traffic manager at Salt Lake City, Utah, was noted in the *Railway Age* of December 14, was born on October 28, 1897, at Effingham, Ill. Mr. Seitz first entered railway service on March 18, 1914, with the Missouri Pacific, leaving this company a few years later to serve with the United States govern-

Ambrose J. Seitz

ment during the World War. During this period he served as confidential clerk to the chief of the Inland Traffic Service of the War department at Washington and chief clerk to the traffic assistant, Southwestern region, United States Railroad Administration, at St. Louis, Mo. From October 1, 1919, to August 1, 1920, Mr Seitz held the position of clerk to the vice-president in charge of traffic of the Union Pacific System at Omaha, then becoming secretary to Colonel D. C. Jackling, industrialist of San Francisco, Cal. On March 1, 1922, he returned to the Union Pacific as freight traffic agent at San Francisco, being appointed general agent in the freight department at Salt Lake City on September 1, 1925. On July 1, 1929, he was further advanced to assistant to the freight traffic manager, with headquarters at Omaha, being appointed general agent in the freight department at New York City on January 1 of the following year. On May 1, 1935, Mr. Seitz was appointed general freight agent at Kansas City, his title being changed to general freight and passenger agent four months later. He was holding the latter position at the time of his recent appointment as assistant traffic manager.

ENGINEERING AND SIGNALING

B. R. Kulp, principal assistant engineer of the Chicago & North Western, who has

B. R. Kulp

been appointed engineer maintenance of way, as noted in the *Railway Age* of December 28, has been in the service of this road for 30 years. He was born at Duncannon, Pa., on December 16, 1883, and attended the public schools at Harrisburg, Pa. After graduating from Rensselaer Polytechnic Institute in 1905, Mr. Kulp obtained his first railroad experience as an instrumentman on the Galena division of the North Western. Later he was advanced to draftsman and to assistant engineer of maintenance on that division, and in 1909 he was transferred to terminal improvement work at Clinton, Iowa. During 1910 and 1911 he served as assistant engineer on yard improvements at Proviso, Ill., and in 1912 he was promoted to division engineer of the Ashland division at Antigo, Wis. Mr. Kulp was appointed trainmaster on the Southern Illinois division at Benld, Ill., in 1917, where he remained until 1918, when he was transferred to the Galena division at Chicago. In 1920 he returned to the engineering department as division engineer of the Madison division, where he remained until May 1, 1931, when he was promoted to principal assistant engineer, the position he was holding at the time of his recent appointment as engineer maintenance of way.

J. A. Peabody, engineer maintenance of way of the Chicago & North Western, whose retirement on January 1 was noted in the *Railway Age* of December 28, has

J. A. Peabody

been connected with the North Western for 37 years. He was born on February 5, 1870, at Chicago and commenced his railway career in June, 1888, as a rodman and instrumentman on the Baltimore & Ohio at Zanesville, Ohio. In 1892, Mr. Peabody was appointed instrumentman on location, with headquarters at Pittsburgh, Pa., and in 1894, he left railway service to become chief draftsman of the Page Iron Works, Chicago. In 1898, he returned to railway service as a roadmaster on the Chicago & North Western, in which position he served successively at Tracy, Minn., Ashland, Wis., and Milwaukee. In 1902, he was promoted to signal engineer with headquarters at Chicago, which position he held until 1931, when he was appointed engineer maintenance of way. Mr. Peabody served the Railway Signal Association, now the Signal Section, A. A. R., as president in 1907.

C. E. Hise, assistant engineer on the Northern Iowa division of the Chicago & North Western, with headquarters at Sioux City, Iowa, has been appointed to the newly-created position of principal assistant engineer of the Chicago, St. Paul, Minneapolis & Omaha, with headquarters at St. Paul, Minn.

OBITUARY

Gordon F. Proudfoot, president of the Lake Erie, Franklin & Clarion, with headquarters at Franklin, Pa., died on December 24 at his home in that city.

William C. Weldon, purchasing agent of the Colorado & Southern, with headquarters at Denver, Colo., died on December 19 at the age of 67 years. Mr. Weldon had been with the C. & S. for 37 years and had held the position of purchasing agent since 1911.

ALCO

"Hiawatha" is hauled by a colorful streamlined, high-powered, oil-burning, steam locomotive built by the American Locomotive Company—the first modern steam locomotive to be built in the United States in which speed alone was the governing factor.

AMERICAN LOCOMOTIVE COMPANY